

EXHIBIT

10

KING
vs.
PARKER, et al.

GAIL VAN NORMAN, MD
January 11, 2022



Jenny Checuga, RPR, LCR

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1 IN THE UNITED STATES DISTRICT COURT
2 FOR THE MIDDLE DISTRICT OF TENNESSEE
3 AT NASHVILLE

4 TERRY LYNN KING,

5 Plaintiff,

6 vs.

Case No. 3:18-cv-01234

7 TONY PARKER, et al.,

8 Defendants.

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13 Videoconference Deposition of:

14 GAIL VAN NORMAN, MD

15 Taken on behalf of the Defendants

16 January 11, 2022

17 Commencing at 9:15 a.m. CST

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1 S T I P U L A T I O N S

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4 The videoconference deposition of GAIL

5 VAN NORMAN, MD was taken by counsel for the

6 Defendants, with all participants appearing in

7 their respective locations, on January 11,

8 2022, by Subpoena for all purposes under the

9 Federal Rules of Civil Procedure.

10 All formalities as to caption, notice,

11 statement of appearance, et cetera, are waived.

12 All objections, except as to the form of the

13 questions, are reserved to the hearing, and

14 that said deposition may be read and used in

15 evidence in said cause of action in any trial

16 thereon or any proceeding herein.

17 It is agreed that JENNIFER CHECUGA, LCR,

18 RPR, and Court Reporter for the State of

19 Tennessee, may swear the witness, and that the

20 reading and signing of the completed deposition

21 by the witness were not discussed.

22

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25

1 * * *

2 GAIL VAN NORMAN,

3 was called as a witness, and having first been
4 duly sworn, testified as follows:

5
6 EXAMINATION

7 QUESTIONS BY MR. MITCHELL:

8 Q. Good morning, again, Dr. Van Norman.

9 A. Hi.

10 Q. I know we introduced ourselves a moment
11 ago. My name is a Rob Mitchell. And I, along
12 with several cocounsel who are on this call,
13 represent the Defendants in this case.

14 Where are you located right now,
15 Dr. Van Norman?

16 A. Seattle, Washington. I am doing this
17 meeting from my home.

18 Q. Okay. And just a second, I'm turning up
19 my volume.

20 Is anyone present in the room with you at
21 your home?

22 A. No, there's no one else in the house but
23 my faithful dog, Cedar.

24 Q. And you've given a deposition before,
25 correct, Dr. Van Norman?

1 A. I have, yes.

2 Q. You probably know how this works then,
3 but just a couple of ground rules I'd like to
4 go over before we begin.

5 If you don't hear what I say, please ask
6 me to repeat. Can you agree to that?

7 A. Oh, sure. Yeah.

8 Q. Okay. And if you don't understand what
9 I'm asking, can you ask me to clarify?

10 A. Will do.

11 Q. Okay. And I'm sure you know this, breaks
12 are okay, but we can't take a break between me
13 asking a question and you answering that
14 question.

15 A. Understood.

16 Q. Okay. Now, I'm going to show you
17 Exhibit 1 in this case, which is the notice of
18 subpoena for deposition and to produce
19 documents.

20 (WHEREUPON, a document was marked as
21 Exhibit Number 1.)

22 BY MR. MITCHELL:

23 Q. And can you see this, Dr. Van Norman?

24 A. I can, thank you.

25 Q. Okay. And have you seen this before?

1 A. Well, looking at it at this moment, it
2 looks like the subpoena I received that was
3 passed on to me by Mr. Kursman.

4 Q. And one other rule since we're doing this
5 over Zoom, because of issues with Zoom on the
6 screen and, you know, what percentage of a
7 document is able to be visible, if you ever
8 need me to scroll up or scroll down or go to
9 another page, you're welcome to ask me to do
10 that.

11 A. Thank you.

12 Q. Sure. Let me scroll down.

13 You see the date right there for
14 December 14th, 2021?

15 A. Yes.

16 Q. Okay. And is this the subpoena you
17 received for today's deposition?

18 A. I believe so, yes.

19 Q. Okay. When did you receive a copy of
20 this document?

21 A. I don't recall the specific date, but it
22 was very shortly after the date you showed
23 above. It was sometime in December.

24 Q. Okay. And have you produced the
25 subpoenaed materials to your attorneys?

1 A. I have.

2 Q. Okay. Well, let's just go through those
3 briefly.

4 MR. KURSMAN: I'm going to object at
5 this point. To the extent, Rob, that you're
6 calling for answers regarding discussions
7 between Plaintiff's counsel and Dr. Van Norman,
8 we've responded to these requests via e-mail,
9 so I will instruct Dr. Van Norman not to get
10 into discussions that she had with Plaintiff's
11 counsel.

12 MR. MITCHELL: Are you instructing
13 her not to answer whether she has produced
14 documents or as to content of conversations
15 with Plaintiff's counsel?

16 MR. KURSMAN: Well, the contents of
17 the conversations with Plaintiff's counsel.
18 You can ask your questions, and then I'll
19 decide one by one whether to object.

20 MR. MITCHELL: Okay, that sounds
21 good.

22 BY MR. MITCHELL:

23 Q. Do you understand that, Dr. Van Norman?

24 A. To the extent that I understand legal
25 language, yes.

1 Q. Okay. So do you see these requests, and
2 Requests 1, 2, 3, 4 are shown on the screen?

3 A. I do see them, yes.

4 Q. Did you produce your entire file on this
5 case to Plaintiff's counsel?

6 A. Yes.

7 Q. Okay. Did you produce all documents and
8 communications regarding this litigation to
9 Plaintiff's counsel?

10 A. I believe so, yes. Yes.

11 Q. Have you produced your complete time and
12 billing records in this litigation to
13 Plaintiff's counsel?

14 A. Yes.

15 Q. Have you produced all documents and
16 communications describing the nature and scope
17 of your work in this case to Plaintiff's
18 counsel?

19 A. Yes.

20 Q. Do you see now Numbers 5 through 8?

21 A. Yes.

22 Q. Okay. And --

23 MR. KURSMAN: I will object to the 5,
24 6. To the extent that these are communications
25 between counsel and their expert, I will object

1 at this point and instruct Dr. Van Norman not
2 to answer as to whether she provided us with
3 this information.

4 MR. MITCHELL: Okay, and that was --
5 so you're instructing Dr. Van Norman not to
6 answer regarding Requests 5 and 6?

7 MR. KURSMAN: 5, 6, 7, 8, 9, 10, 11,
8 12, 13 and 14.

9 MR. MITCHELL: Okay.

10 All right. If I didn't say it
11 already, we'll have it marked as Exhibit 1,
12 please.

13 BY MR. MITCHELL:

14 Q. Okay. Dr. Van Norman, are you under the
15 influence of anything that could hinder your
16 ability to testify truthfully today?

17 A. No.

18 Q. Okay. Including -- are you under the
19 influence of any medications that could affect
20 your ability to testify truthfully?

21 A. No.

22 Q. Do you have any medical condition that
23 could affect your testimony today?

24 A. No.

25 Q. Did you speak with anyone in preparation

1 for your testimony today?

2 A. Yes.

3 Q. And who did you speak with in preparation
4 for your testimony?

5 A. I met with Mr. Kursman and counsel in his
6 office. I didn't meet in his office, I met
7 with people from his office.

8 Q. Was that meeting over some sort of medium
9 like Zoom or Teams or Webex, or was it over the
10 phone?

11 A. It was a phone meeting. Oh, wait, wait.
12 No, it was over Zoom. I apologize.

13 Q. That's okay.

14 When was that meeting?

15 A. It was on Friday, I believe, of last
16 week.

17 Q. Okay. Did you only have one meeting with
18 Mr. Kursman and other attorneys for the
19 Plaintiff in this case?

20 A. One meeting the entire case -- time the
21 case has been --

22 Q. Let me clarify that. Good example of the
23 ground rule we went over.

24 Since submitting your expert report in
25 this case, how many times have you met with

1 Mr. Kursman or other Plaintiff's counsel?

2 A. Can you -- I'm sorry, I need a
3 clarification of what you consider "meeting."
4 I mean, we've communicated, but I don't know
5 what you mean by "meeting."

6 Q. Sure. We can break that down.

7 A. Yeah.

8 Q. Since November 17th, how many Zoom or
9 Teams or Webex meetings have you had with
10 Plaintiff's counsel?

11 A. Just the one.

12 Q. Okay. And how many -- since
13 November 17th, how many phone calls have you
14 had with Plaintiff's counsel?

15 A. I may have -- I don't recall exactly. I
16 may have had two or three brief phone calls to
17 clarify materials and things like that.

18 Q. And were all of those phone calls in
19 preparation for your testimony today?

20 A. Not directly, no.

21 Q. Were any of them in preparation for your
22 testimony today?

23 A. No, none of them. The only -- no.

24 Q. So the only meeting in preparation for
25 your testimony today that you had with

1 Plaintiff's counsel was the Zoom meeting?

2 A. That's correct, yes.

3 Q. And during that Zoom meeting, did
4 Plaintiff's counsel show anything to you?

5 A. Not that I recall, no.

6 Q. Did they read anything to you?

7 A. Again --

8 MR. KURSMAN: I'm going to --

9 Dr. Van Norman, I'm going to object to the
10 extent that it -- Mr. Mitchell's questions are
11 getting into conversations between counsel and
12 Dr. Van Norman.

13 BY MR. MITCHELL:

14 Q. How long was the meeting with Plaintiff's
15 counsel that was over Zoom in anticipation of
16 your testimony today?

17 A. I think it was about two-and-a-half
18 hours. It might have been three.

19 Q. Did you speak with anyone else, other
20 than Plaintiff's counsel, in anticipation of
21 your testimony today?

22 A. No.

23 Q. Did you review anything to prepare for
24 your testimony today?

25 A. I did.

1 Q. What did you review to prepare for your
2 testimony?

3 A. I reviewed my expert report.

4 Q. Okay. Did you review anything beside
5 your expert report?

6 A. Well, it depends on what you would
7 consider preparation for today. I mean, not
8 specifically, but I have reviewed other
9 materials in the course of my work.

10 Q. In the last two weeks, what materials
11 have you reviewed for your work in this case?

12 A. In the last two weeks, I -- I've reviewed
13 expert reports from the Defendants and expert
14 reports from the Plaintiff.

15 Q. Which Plaintiff's expert reports have you
16 reviewed in the last two weeks?

17 A. I have reviewed -- I'd have to look
18 at the name -- I'm sorry, names don't stick
19 with me, but I've reviewed Dr. Antognini's
20 expert report. There was a medical examiner.
21 I believe there was a pharmacist. And I think
22 I'm forgetting one, but I would have to look at
23 the file to see.

24 Q. And those -- those were the reports
25 provided by Defendants in that case?

1 A. I'm sorry, that -- yes. Yes, that's
2 correct.

3 Q. Which expert reports provided by
4 Plaintiffs did you review in the last two
5 weeks?

6 A. I reviewed Dr. Stephen's report. I, of
7 course, reviewed my own report. Again, I'm
8 forgetting the names of a couple of experts, so
9 I'd have to look. I believe there were four
10 reports that I reviewed.

11 Q. To your knowledge, did you review all of
12 Plaintiff's expert reports?

13 A. I reviewed all that were sent to me, yes.

14 Q. Where did you attend high school,
15 Dr. Van Norman?

16 A. I attended Issaquah High School in
17 Issaquah, Washington.

18 Q. And did you go to college after high
19 school?

20 A. I did. I went to the University of
21 Washington.

22 Q. Did you take any time between graduating
23 high school and going to college?

24 A. No, uh-uh.

25 Q. And you said you went to college at the

1 University of Washington?

2 A. I went to undergraduate at the University
3 of Washington. That's correct.

4 Q. And did you get a bachelor's degree
5 there?

6 A. I got an honors bachelor's degree there,
7 yes.

8 Q. What was that bachelor's degree in?

9 A. Microbiology.

10 Q. And what year did you receive that
11 degree?

12 A. 1977.

13 Q. And after receiving your bachelor's, did
14 you pursue your education further?

15 A. Yes.

16 Q. Okay. What did you do next to pursue
17 your education?

18 A. I went to medical school. I started in
19 1977.

20 Q. And did you graduate from medical school?

21 A. Yes, I did.

22 Q. I'm sorry, can you say that again?

23 A. I apologize. Yes.

24 Q. And where did you graduate -- where did
25 you graduate from medical school?

1 A. The University of Washington, also.

2 Q. And what year was that?

3 A. That was 1981.

4 Q. And so, did you get an MD degree there?

5 A. I did, yes.

6 Q. And where did you do your residency?

7 A. I did two residencies. So I first went
8 to Virginia Mason Hospital to do internship and
9 then internal medicine residency. And then I
10 did an anesthesia residency -- anesthesiology
11 residency at the University of Washington
12 starting in 1986.

13 Q. And did that anesthesiology residency
14 translate into full-time employment?

15 A. Yes. Very full time.

16 Q. Yes.

17 And are you still with the University of
18 Washington today?

19 A. Well, still -- yes, I'm with University
20 of Washington today, but I've had employment
21 with private anesthesiology groups in my
22 career, as well. So I've worked continuously
23 as part of the University of Washington, but
24 I've also had other employers.

25 Q. In what areas do you currently practice

1 medicine, Dr. Van Norman?

2 A. Anesthesiology and perioperative
3 medicine.

4 Q. And since completing your residency, have
5 you ever practiced any other areas of medicine?

6 A. Well, yes, I -- since graduating
7 anesthesia -- anesthesiology residency or
8 internal medicine residency?

9 Q. Let's stick with the anesthesiology
10 residency.

11 A. Other than -- yeah, it's
12 been anesthesiology and/or perioperative
13 medicine since graduation from the
14 anesthesiology residency, yes.

15 Q. Can you break down when you practiced
16 perioperative medicine?

17 A. Well, all the way through, but it really
18 became known as kind of a subset of the
19 specialty of anesthesiology probably in the
20 late 1990s.

21 So everybody practices a form of
22 perioperative medicine, but I've also --
23 besides operating room medicine, I've also
24 concentrated in clinical perioperative medicine
25 where we actually prepare patients for surgery

1 ahead of time. So there's a slight difference
2 in what I do than what most anesthesiologists
3 do.

4 Q. Okay. Can you describe that difference a
5 little more for me? Yeah, can you describe
6 that -- the difference between what you do and
7 what typical anesthesiologists do?

8 A. Well, when we talk about
9 perioperativeness and we're talking about sort
10 of taking care of the patient both before
11 their -- they come to surgery, in the surgery,
12 and also postoperatively, after surgery, which
13 may mean pain management and in-hospital
14 management of hospital patients.

15 So every anesthesiologist does some of
16 that, but I also am specialized in preparing
17 patients for surgery. So when a patient, for
18 example, with medically complex problems gets
19 to their surgeon for a surgery that's being
20 planned, I will often see them or contact them
21 or review their medical status in some way to
22 determine, one, do we know everything we know
23 about the patient that we need to for surgery;
24 two, are their medical problems adequately
25 stabilized to undergo the surgery; three, are

1 there tests that I should order or someone else
2 should order to give us more information and/or
3 help us stabilize them if they're not.

4 I will consult with the providers, the
5 surgical providers and the medicine consult
6 people in the hospital about what we would like
7 to see happen to stabilize patients before
8 surgery. And then we communicate and sometimes
9 coordinate special scheduling for the patient;
10 meaning, if we think their anesthesia care
11 might require a very specialized anesthesia
12 provider, we coordinate with the schedule to
13 make sure that happens.

14 So we do a form of internal medicine
15 prior to the patient's surgery, and then we are
16 less involved with the postoperative -- I am
17 less involved with the postoperative
18 management, except when I'm performing
19 anesthesia as a -- as -- in the operating room,
20 so...

21 Q. And how often are you performing
22 anesthesia in the operating room?

23 A. These last few months, I'm not doing any
24 because of the pandemic. I have medical
25 conditions that make it particularly high risk

1 if I catch COVID. And at the time, we were
2 about -- we were partially into the pandemic
3 when we realized that I -- I was really doing
4 virtually all high-risk surgeries to catch
5 COVID. I was doing things called
6 bronchoscopies and navigation bronchoscopies
7 and endoscopies. And so, both being medically
8 at risk myself, plus doing the high-risk
9 procedures, there were a number of us,
10 including myself, that decided not to do
11 operating room care, anticipating that the
12 pandemic would be over in a few months. But,
13 of course, it's drug on.

14 So for a few months now, I haven't done
15 operating room anesthesiology, but I've
16 continued doing active perioperative care. And
17 if the pandemic ends before I retire, I
18 would -- I would go back to the operating room.

19 Q. So let's rewind and go pre-pandemic.
20 Let's say in 2019, how many operating room
21 anesthetics were you performing in a given
22 month?

23 A. Oh, gosh. That's so long ago now. I was
24 probably doing around 80 per month, something
25 like that, at that time.

1 Q. In 2019?

2 A. Yeah. That's a guesstimate. I'd have to
3 go back and look at my calendar and see, but I
4 think that it would be more in months where I
5 was in the operating more and less in clinic,
6 but if I gave an average, probably about that.

7 Q. When you're in the operating room, can
8 you walk me through what your role is and what
9 your responsibilities are related to
10 anesthesia?

11 A. Well, our responsibilities begin before
12 the operating room, which is, I review my
13 patient's medical history. If I wasn't the one
14 to do the preoperative clinic visit, I review
15 my patient's medical history and determine and
16 plan what I think will be the best course of
17 anesthesia care for them.

18 Then I meet the patient and go through
19 that medical history and do a physical exam to
20 be sure that they do -- that the picture I have
21 of them on the day of surgery indicates that
22 they are stable and that I do know what I need
23 to know for them medically.

24 And presuming that that's all in line, I
25 then will usually start -- at least start an IV

1 because we'll need to be giving medications
2 through the IV. And the reason I say "usually"
3 is that sometimes the nurses will do that for
4 us, but I personally do that most of the time.
5 I place the monitors, take the patient to the
6 operating room where we then transfer them to
7 the monitors and the machines in the operating
8 room.

9 I administer medications that help them
10 feel comfortable and relaxed. When everybody
11 is prepared and ready in the operating room and
12 we've confirmed that the patient is the correct
13 patient and that we all agree on what surgery's
14 going to be done and we confirm that with the
15 patient, I'll usually go ahead and use
16 medications to sedate them and to help them
17 fall asleep.

18 If they require airway manipulation, I
19 carry that out. And then I begin the period of
20 maintenance anesthesia where we are -- where
21 the surgery after that -- well, the patient's
22 usually being prepped and draped, and then the
23 surgery begins and I have to adjust all of my
24 medications and start watching the surgical
25 field to do a continual adjustment of

1 medications to meet surgical stimulus.

2 When the surgeon is -- has finished the
3 surgery, then I go through a process of
4 withdrawing medications from the patient so
5 that they can become arousable again and be
6 safe to transfer to the care of another in the
7 recovery room.

8 We monitor them continuously from the
9 time they enter the pre-op holding area to the
10 time we take them to the recovery room. And
11 then after that, I'm still responsible to go
12 and assess their wellbeing and assess how well
13 they're recovering from the anesthetic and from
14 the surgery, whether they have good pain
15 control, whether they're suffering any
16 immediate complications that require treatment,
17 call those to the attention of the surgeon if
18 they're appropriate or deal with them myself,
19 and determine whether it's appropriate and safe
20 to discharge the patient home if they're going
21 home or discharge them to the ward in the
22 hospital if they're going to ward care.

23 Q. That's helpful, thank you.

24 So as an anesthesiologist, when you're
25 monitoring a patient during surgery, what are

1 you monitoring?

2 A. We're monitoring a lot of things. We're
3 physically monitoring the patient for signs of
4 distress, and that may include things like --
5 we use almost all of our senses. We use touch
6 and hearing and eyesight to show, for example,
7 is the patient -- when they're under -- let me
8 back up.

9 Did you ask me under anesthesia? Is that
10 when you were --

11 Q. Presumably under anesthesia, because I'm
12 asking about during surgery.

13 A. Oh, great.

14 Q. Hopefully they're under anesthesia.

15 A. Thank you.

16 So I'm monitoring whether the patient's
17 tearing, for example, sweating as though
18 they're under stress. I'm monitoring heart
19 rate and blood pressure. I'm monitoring things
20 like, is their respiratory -- it depends
21 large -- it -- I should say all my monitoring
22 also depends not only what surgery's going on
23 but what type of anesthetic I'm doing.

24 So, for example, if I'm doing an
25 anesthetic that is requiring the administration

1 of a muscle relaxant, I have a nerve twitch
2 monitor that helps me to monitor whether, in
3 fact, they are paralyzed or not, or whether the
4 muscle relaxant needs re-dosing.

5 I am also monitoring the clock because
6 there are certain medications that we give
7 during surgery that are timed dosing, so I have
8 to be sure and make sure that those go in on
9 time.

10 And I'm monitoring the surgery. I mean,
11 that's important to say, because the anesthetic
12 varies -- that I have to administer varies a
13 lot during the course of one surgery, depending
14 upon what the surgeon is doing.

15 I'm also monitoring to see when it's
16 appropriate to time various aspects of the
17 anesthetic, okay? So I might be monitoring
18 whether the surgeon has, for example, curtailed
19 the surgery earlier than normal, and so I need
20 to be adjusting the medication accordingly, or
21 perhaps the surgeon has run into trouble and
22 needs different operating conditions.

23 So let's -- I'll give you an example,
24 just so that seems clear. Let's say the
25 surgeon accidentally tears a significant blood

1 vessel and the patient starts to bleed, I may
2 have to administer medications to lower the
3 patient's blood pressure so that they're
4 bleeding less so that the surgeon can see
5 better and also that there would be less blood
6 loss until the -- until he or she is able to
7 manage it.

8 I'm taking as an example a general
9 surgery case rather than, like, a neurosurgery
10 case, which would require different monitors of
11 the brain than we would use in the general
12 operating room. So I'll give you that caveat.

13 Q. So let me ask you this: What's a typical
14 surgery case? Can you give me some examples of
15 those, typical surgery cases you're involved in
16 or used to be involved in in the OR?

17 A. You mean what kinds of surgeries?

18 Q. Yes.

19 A. What is called a -- you know, what is a
20 bread-and-butter -- what we call a
21 bread-and-butter anesthesia case, because I
22 also subspecialize in heart surgery. So
23 bread-and-butter case might include any what we
24 call intracavitary surgery, so surgery within
25 the chest, within the belly, within the pelvis.

1 So let's say you had colon cancer, we might be
2 resecting that.

3 Bread-and-butter cases also include
4 orthopedic cases such as major hip surgery,
5 knee surgery, et cetera. They would be GYN
6 cases such as hysterectomies. ENT cases such
7 as sinus surgeries. Those are the ones that
8 come to mind to me as being sort of mainstream.
9 There are lots of other surgeries that all
10 anesthesiologists participate in but that
11 sometimes require specialty anesthesia care,
12 so...

13 Q. So you talked about how you use at least
14 three senses when you're monitoring a patient
15 during surgery. We talked about eyesight. Can
16 you tell me a little bit about touch, how you
17 use sense of touch when you're monitoring a
18 patient?

19 A. Well, a number of different ways. For
20 example, I -- if I think a patient is stressed,
21 I may place my hands on the skin of their face,
22 if that's what's close to me, to see if they've
23 become hot.

24 I'm also monitoring the patient's
25 temperature, by the way, for other reasons

1 because certain reactions to anti -- number
2 one, certain reactions to anesthesia can cause
3 a severe temperature.

4 I also use my fingers to tell me if the
5 patient's getting cold because getting cold
6 leads to certain postoperative complications,
7 in addition to monitoring their core
8 temperature. So I might touch them there, I
9 might touch them to see if they're sweaty, for
10 example. Are they acting like they're under
11 stress, so sweat is another sign of that. You
12 don't usually see people sweat under surgery.

13 And I also may use my sense of touch in
14 other ways. I mean, there might be times in
15 which I want to -- I know the patient has a
16 pulse, but I want to feel what that pulse is
17 like. Is it strong and bounding, is it meek
18 and thready? The monitors don't tell me that.
19 They just tell me that the pulse is there.

20 I may want to see if the muscles are
21 tight in certain aspects on the patient, so I
22 may feel those with my fingers.

23 Q. Are there any other ways you rely on the
24 sense of touch when you're monitoring a patient
25 during surgery?

1 A. Probably, but I don't know that I'm
2 covering them all here. I don't want to say
3 that I've told you every single way in which I
4 use my sense of touch, so -- I've covered the
5 major ones, yes.

6 Q. Are these ways of monitoring the patient,
7 are these all standardized?

8 A. Some of them are and some of them are
9 not.

10 Q. How do we -- or how do you know which
11 ones are and which ones aren't?

12 A. Are you asking the question about
13 monitoring in general or are you asking about
14 touch specifically?

15 Q. Let's start with touch.

16 A. There aren't really -- because touch is a
17 subjective feeling, I don't -- I can't think of
18 an example to give you of a standardized way to
19 use my touch sense to monitor patients. You
20 know, I -- I'm using a sense that I, myself,
21 have a subjective feeling of or I might be
22 using my sense of touch to compare how the
23 patient feels at one point than another in the
24 case, but I can't think of an example at this
25 moment of a standardized test for touch.

1 Q. Are the means of monitoring a patient
2 during surgery via the sense of touch that
3 you've described common among
4 anesthesiologists?

5 A. I presume so, yes.

6 Q. But you don't know?

7 A. I -- I think so, yes.

8 Q. Okay. Are there other common means of
9 monitoring a patient by the sense of touch that
10 we haven't talked about?

11 A. As I said, I'm just not thinking of any
12 right now. I'm not going to tell you they
13 don't exist, but at this moment, those are the
14 ones I think -- I can think of.

15 Q. Okay. What about the sense of hearing,
16 how do you use your sense of hearing when
17 you're monitoring a patient during surgery?

18 A. Well, the most common way sense of
19 hearing is used with direct monitoring of the
20 patient is we're listening to sounds that the
21 electronic and mechanical monitors are making,
22 as well as the sounds of our equipment.

23 So, for example, when we say we listen to
24 the patient's heartbeat, which we do all the
25 way through surgery, I don't mean that I lay my

1 ear on their chest and listen to their heart
2 that way. What I mean is that I'm listening to
3 the monitor making a beeping sound. It tells
4 me that the patient's heart is beating.

5 And all of the different monitors have
6 different tones and sounds that I listen to to
7 tell me things like, first of all, does the
8 patient have a heartbeat; how fast is it
9 beating; is it regular or irregular; is the
10 pulse oximeter telling me that the oxygen
11 saturation is within normal range; is it
12 rising; is it falling; is my ventilator
13 sounding appropriate; is it struggling to get
14 air into the patient or is it not?

15 Is my -- are any of the alarms that are
16 going -- that I have set on my machine to tell
17 me that I should look, they aren't necessarily
18 alarms that tell me anything's wrong, but they
19 tell me, I don't want that blood pressure, say,
20 above 150, so I'm going to set an alarm to tell
21 me when it gets to 140 so that I look and see
22 what's happening. And there are multiple,
23 multiple such alarms that we listen to in the
24 operating room.

25 We also listen to things that the

1 surgeon's saying about what's going on in the
2 surgery. We listen to the patient, if the
3 patient is making noises, to see if they --
4 what kinds of noises that they might be making.

5 And I've probably covered most of them, I
6 may have missed some of them.

7 Q. What are noises patients make during
8 surgery?

9 A. Under general anesthesia?

10 Q. Sure.

11 A. It's rare for someone to make any sounds
12 under general anesthesia, particularly during
13 bread-and-butter surgeries, we usually have
14 them paralyzed and they don't make noises.

15 But, for example, as I'm getting them off
16 to sleep, they might look or sound distressed.
17 As they're waking up, they may look or sound
18 distressed. So, for example, if they're waking
19 up and now they're not paralyzed and they're
20 moaning, then I know I haven't given them
21 enough pain medicine, and I will be not waiting
22 for them to be able to tell me that, I'm going
23 to give them pain medicine beforehand.

24 There are sometimes sounds that patients
25 make unintentionally -- well, I shouldn't even

1 say -- well, the patient makes the sound, but
2 it's not that the body, per se, is making the
3 sound. For example, the -- if I have a
4 breathing tube in them or an LMA, there may be
5 leakage around those, and so I may hear sighing
6 or bubbling or gurgling that are not sounds
7 that the patient is trying to make. These are
8 sounds that the secretions of the patients are
9 making against the equipment, but we call
10 them the sound -- you know, the patient has a
11 gurgling sound or whatever.

12 So I -- those are the things I'm thinking
13 of right now. Does that answer your -- the
14 question that you were --

15 Q. That's helpful.

16 Do you ever hear the gurgling sound when
17 a patient isn't intubated?

18 A. Sure.

19 Q. Is that common?

20 A. Sure.

21 Q. What sounds do patients make when they're
22 not under general anesthesia?

23 A. Well, it could be anything. I could be
24 doing monitored anesthesia care in a patient
25 who has regional anesthetic in and having a

1 conversation with them, you know.

2 So the patients can alert us to the fact
3 that they're becoming uncomfortable if they
4 aren't under general anesthesia. They can
5 tell -- they are able to communicate more
6 directly with us and tell us what might make
7 them more comfortable. It's not always and not
8 even often that they would be uncomfortable
9 from what the surgeon is doing. It might be,
10 for example, that they're now positioned on a
11 table or that they need to be repositioned so
12 that they don't have pressure, things like
13 that.

14 They can tell me that they're distressed
15 psychologically, that they're feeling anxious
16 and ask me if I can give them something for
17 that. They may -- I mean, it's anything. If
18 they have a sudden pain for whatever reason,
19 they may yelp or make a sound that indicates
20 pain. They may -- if they sort of drift off to
21 a light sleep, they might snore and wake
22 themselves up, so I might hear those sounds.

23 So it's -- there's a multitude of sounds
24 that people make in the operating room.

25 Q. Do patients snore under general

1 anesthesia ever?

2 A. Yes, but they don't have to be under
3 general anesthesia to snore.

4 Q. But under general anesthesia, they can
5 snore?

6 A. They can if -- a snore is a sound when
7 the airway is narrow and the air is rushing
8 through and making a loud noise. That's what
9 snoring is caused. And that can happen under
10 general anesthesia, yes.

11 Q. And during surgery, you talked about
12 machines and instruments, what machines and
13 instruments are you relying on to monitor a
14 patient?

15 A. Well, obviously blood pressure, an EKG
16 would be standard of care, as is pulse
17 oximetry. We use -- those are the main
18 monitors that are standard of care right now.

19 Capnography, which is monitoring the
20 amount of carbon dioxide that a patient's
21 exhaling, is another monitor we commonly use,
22 although it's not required.

23 There are monitors, as I mentioned, of
24 nerve twitch that are commonly used to tell us
25 if the patient needs muscle paralysis.

1 Q. As an anesthesiologist, are there any
2 other machines you commonly use when a patient
3 is undergoing surgery?

4 A. Well, I mean, sure. I mean, there are --
5 well, "commonly" is a -- any monitors we
6 commonly use. I'm sorry, we do -- well, no.
7 Our machines will monitor our ventilator -- our
8 ventilator function, for example, peak
9 inspiratory pressure, tidal volumes, how
10 much -- if we're ventilating the patient, if
11 the patient's been given assistance. So we
12 monitor that commonly.

13 I need to walk myself through a common
14 case here for a second.

15 Q. Take your time.

16 A. Yeah, I think I mentioned blood pressure
17 already.

18 There are more -- I'm not sure if you're
19 referring to this, there are more evasive
20 methods of blood pressure monitoring such as
21 arterial waveforms and Swan-Ganz catheters, but
22 they are not commonly used. They are used in
23 specialty cases.

24 Q. What -- what types of anesthetic do you
25 use, Dr. Van Norman, for patients who are

1 undergoing surgery? And let's leave cardiac
2 surgery to the side.

3 A. Oh, darn.

4 Q. Sorry, what was that?

5 A. Oh, darn.

6 Q. Yeah, we can come back to that in just a
7 moment. So for your general surgeries, the
8 bread-and-butter ones that you outlined a
9 minute ago, what sorts of anesthetics do you
10 generally use? Not what sorts, what
11 anesthetics do you normally use?

12 A. It totally depends on the surgery and on
13 the patient, and so I'd have to name a hundred
14 different anesthetic techniques for you. If
15 you can be more specific of what you're
16 referring to.

17 Q. Just give me a couple of examples of
18 common ones. I mean, in 2019, you know, we're
19 talking about 80 procedures per month, what
20 were some of the ones on the top of the list?
21 I'm not asking necessarily what the top was,
22 just give me what those were.

23 A. Well, for example, for bronchoscopy, we
24 would use -- we generally used what's called
25 TIVA, which is total IV anesthesia. Not

1 always. The reason we use -- we sometimes use
2 volatile anesthetic agents, which are those
3 agents that you breathe in, the gases like
4 isoflurane, sevoflurane, desflurane.

5 But sometimes -- often in those cases, we
6 are what's called sharing the airway with the
7 surgeon who's actually peering down a scope
8 into the patient's airway, and we don't want to
9 anesthetize the surgeon, as well, which would
10 be counterproductive. So we often will use
11 what's called total IV anesthesia or TIVA, and
12 that would consist usually of Propofol and
13 together with a very potent narcotic,
14 alfentanil or remifentanil or one of those with
15 a muscle paralytic agent.

16 Q. And what agents -- I'm sorry.

17 A. I'm sorry, and that would -- that would
18 be three drugs -- three main drugs we would
19 use, but most general anesthetics don't just
20 rely on those drugs. There are also a number
21 of other drugs that we're giving that affect
22 the patient's depth of the anesthesia and
23 responsiveness.

24 We are giving medications like Atropine
25 and glycopyrrolate, which affect thinking,

1 function. We're giving the muscle relaxant
2 along with its antidotes at times. We're
3 giving drugs like ephedrine that affect both
4 blood pressure and brain. We give droperidol
5 in certain cases, which affect the brain's
6 perception of nausea and other issues.

7 So, I mean, I could list -- the average
8 general anesthetic probably takes about six to
9 ten drugs in order to complete. So the TIVA
10 that I described, I've just described the very
11 bare bones, but there's really a myriad of
12 other drugs that also go in to orchestrating
13 that anesthetic.

14 Q. And for cardiac anesthesia, how does that
15 differ?

16 A. It doesn't -- it differs not
17 significantly now. It used to differ quite a
18 lot. Right now, people use a very similar
19 array of drugs. There are many more
20 dopaminergic and norepinephrinergic medications
21 that are used in the course of anesthesia for
22 heart surgery that also affects arousal, things
23 in the brain.

24 And the different -- part of the
25 difference now -- well, in heart surgery is

1 that some of the surgeries require use of the
2 cardiopulmonary bypass machine, and there is a
3 volatile agent that is given that way rather
4 than through the lungs, for example, and it's
5 administered by a different individual than the
6 anesthesiologist.

7 Q. And what would that agent be?

8 A. Depends on where you do the -- it's local
9 practice, so the agent would usually -- in our
10 institution would either be sevoflurane or
11 isoflurane.

12 Q. And what agents do you use for the
13 induction of anesthesia?

14 A. Well, the induction of anesthesia is
15 really the presurgical part of the anesthetic,
16 and that can include any number of agents.

17 You know, patients -- first of all, it
18 includes the patient's premedication, and that
19 can include things like glycopyrrolate,
20 depending upon the case to dry up the mouth if
21 it's an ENT case.

22 We would give also probably a small dose
23 of midazolam. We would give narcotic. And
24 then in the -- and then as we continue to
25 progress through the induction phase of the

1 anesthesia, we may add on the volatile agents
2 and we may also add on a muscle paralytic
3 agent.

4 Those are examples. They are not
5 inclusive of all the drugs I could choose from.
6 I could use droperidol, for example. I could
7 use any one of the high dose potent narcotics.

8 Q. You said small dose of midazolam. What
9 would a small dose be?

10 A. It's unusual for anyone to use more than
11 1 to 2 milligrams of midazolam.

12 Q. And has that always been the case through
13 the course of your practice?

14 A. Well, not with the benzodiazepines, no.
15 In -- when I did -- in the -- you're talking to
16 an old anesthesiologist. And when I trained in
17 cardiac anesthesia, the standard anesthetic
18 that we gave consisted of a high dose
19 benzodiazepine. In the beginning, it was
20 Valium, which is closely related to midazolam,
21 and about one -- about -- only slightly less
22 potent. They're almost equivalent. And then
23 that changed to midazolam briefly when
24 midazolam was invented. But that together with
25 a high dose of potent narcotic -- in our case,

1 it was fentanyl at the University of the
2 Washington, but many cardiac groups used
3 another drug called sufentanil. We gave a high
4 dose muscle relaxant and we gave, in addition
5 to that, premedicant with a high dose potent
6 narcotic like morphine, high dose central
7 acting anticholinergic like scopolamine.

8 And, boy, you're asking me to remember
9 back when, way back when, but again, you know,
10 those other -- those other medications I've
11 also mentioned that -- like dopaminergic
12 medications and such that go along with also
13 regulating the heart.

14 Q. What's a high dose of Valium?

15 A. Well, most people -- it depends on
16 whether you're going to administer it by oral
17 ingestion or IV ingestion. Most of us would
18 not prescribe for a patient who's not -- not
19 around to take more than 5 or 10 milligrams of
20 Valium orally. If we gave that amount IV, we
21 would see some pretty serious effects from it.
22 But in the case of the cardiac surgeries that
23 I'm talking about, we gave at least one
24 milligram per kilo of volume. So in a hundred
25 milligram -- I'm sorry, hundred kilogram

1 person, we would give a hundred milligram of
2 Valium IV.

3 Q. Which -- hundred kilograms is about what
4 in pounds?

5 A. It's 220 pounds.

6 Q. And you mentioned a couple times earlier
7 about relying on a ventilator. Do you commonly
8 rely on a ventilator when you put someone under
9 anesthesia?

10 A. It's -- it's -- yes and no. I mean, yes,
11 it's common, but it's also common to not
12 require one.

13 Q. And when is one required?

14 A. Well, if we're going to give a muscle
15 relaxant or a paralytic agent, we have to use
16 the ventilator because the patient will not be
17 able to breathe on their own. And so, any case
18 that requires paralyzing the patient will
19 require some form of ventilation, whether by
20 hand or by a ventilator.

21 With your permission, I'm going to refer
22 to ventilation as being either one because it
23 amounts to somebody else giving a breath to the
24 patient. And so, obviously, those we have to
25 do -- use ventilation in.

1 There can be others in which the patient
2 has medical conditions and won't maintain their
3 own oxygenation well under spontaneous
4 ventilation, laying in a certain position on
5 their back or whatever, and so we may choose to
6 ventilate them during that time, even though
7 they're breathing.

8 And if there's going to be surgery up
9 inside the airway, and that includes the face,
10 the nose and the upper airway, we're pretty
11 likely to want to ventilate them because we'll
12 want to protect that airway from blood and
13 secretions that could go down into the airway
14 from the surgery itself.

15 Let's see. There are certain types of
16 patients we may want to ventilate even if the
17 surgery by itself wouldn't require it. A very,
18 very heavy person, for example, somebody who
19 weighs -- I shouldn't say very, very heavy
20 person. A heavy person might not have good gas
21 exchange under anesthesia unless we assist
22 their ventilation, so we might want to do it
23 for that reason.

24 And then there are patients in which the
25 surgery itself may affect breathing, so we'll

1 want to ventilate them, like surgery on the
2 lungs themselves.

3 Q. And help me understand, did I hear you
4 correctly that each time you administer a
5 muscle relaxant, you also ventilate the
6 patient?

7 A. In some way, yes.

8 Q. Okay. And those ways are either through
9 a machine or by hand?

10 A. Yeah. I mean, there are some esoteric
11 ways to deliver it, but they would all be
12 mechanical. They aren't necessarily all
13 through a traditional ventilator, but they do
14 involve mechanical ventilation or hand
15 ventilation by the anesthesiologist.

16 Q. What -- can you go through the ways of
17 mechanical ventilation for me?

18 A. Sure.

19 Q. I mean, how many are there?

20 A. Oh, I mean, there are -- let me see if I
21 can divide them into groups. I mean, there are
22 probably a hundred different ways to do it, but
23 you're not interested in that, I assume.

24 Well --

25 Q. So the -- well then, let me stop you

1 right there, because I'm just trying to learn.
2 There's a -- are there a hundred different
3 machines to mechanically ventilate someone? Is
4 that what you're saying?

5 A. No, I'm -- well, ventilators come in
6 hundreds of different varieties, but I'm just
7 going to call it a ventilator. That's -- and
8 that's a machine that delivers a specific tidal
9 volume of gas to the patient or of -- yeah, gas
10 because it's not usually room air, in measured
11 intervals at certain times under certain
12 desired pressures.

13 But there are other ways you can
14 ventilate a patient. You can use something
15 called jet ventilation, for example.

16 Q. And what's that? I'm unfamiliar with
17 that.

18 A. Well, without -- the explanation might be
19 too long to get too detailed, so let me see if
20 I can summarize it.

21 In that, what we're doing is we're using
22 a very small tube, usually a metal tube,
23 through which we pass gas, air, at high
24 velocity. That tube is pointed down the airway
25 and it will -- as that gas goes in, it will

1 draw air into the chest from the atmosphere,
2 and the chest will expand, and then we can --
3 we can rhythmically do that, stop doing that
4 and allow the chest to fall.

5 This is not the same as having a
6 ventilator push gas to the patient. It doesn't
7 regulate how much gas goes in. It would be a
8 common method of ventilation during some ENT
9 procedures that are looking at the vocal cords
10 and whatever, where they don't want a tube in
11 place.

12 We can also ventilate through a
13 bronchoscope in a similar way. So if a surgeon
14 is using a bronchoscope down to look around the
15 lungs, we can use a similar but not identical
16 technique to ventilate -- partially ventilate
17 the patient that way.

18 Is that what you wanted to know?

19 Q. That's helpful, that's helpful. Thank
20 you.

21 Under what circumstances would you
22 ventilate a patient by hand?

23 A. I might ventilate them by hand if, for
24 example, they only need help for a minute or
25 two and I don't want to take -- I don't want to

1 put them through the risk of putting a
2 breathing tube in.

3 So let's say a patient is having a
4 surgery where the stimulus is rising and
5 falling pretty dramatically at different times
6 during the surgery. So I have to have them --
7 I don't have them paralyzed because they don't
8 need it. Obviously, if I'm going to -- in a
9 case like this, and --

10 Q. In a case like what?

11 A. Where the -- in a case like what I'm
12 talking about. I'm talking about when I'm hand
13 ventilating.

14 So I might be hand ventilating -- you
15 asked me instances, and one instance might be a
16 surgical case in which I don't have them
17 paralyzed, the stimulus is increasing and
18 decreasing, and so, my medications are not --
19 I'm not able to sync my medications very well
20 with the stimulus, and there are times in which
21 they are breathing less effectively. I might
22 put a mask on their face and hand ventilate
23 them.

24 I might hand ventilate them also through
25 cases in which -- that are very, very short.

1 For example, the -- a quick case where an ENT
2 doc wants to just quickly take a look at the
3 vocal cords, we're not going to do anything
4 more than that, and to paralyze them and put a
5 breathing tube in would require -- then a
6 recovery time would be much longer than they
7 need. So I would actually -- I might paralyze
8 the patient at that time and hand ventilate
9 them myself, give them a much lower dose of
10 paralytic, hand ventilate myself, and then as
11 soon as the surgeon is done, I can reverse them
12 and they're breathing.

13 So there are also times in which a
14 patient might just breathe inadequately for
15 intrinsic reasons to the patient and they don't
16 need full ventilation, they just need an
17 occasional extra puff from me in addition to
18 what they're doing, and I would ventilate them
19 that way.

20 So those are some examples. They aren't
21 all-inclusive.

22 Q. So do you often hand ventilate when a
23 paralytic is administered?

24 A. We often end up hand ventilating for a
25 few minutes because, obviously, when we are

1 doing a case with a paralytic being
2 administered, we give the paralytic before we
3 have the breathing tube in. So if we're going
4 to put a breathing tube in, we have to give a
5 paralytic.

6 And during the time that the paralytic is
7 taking effect, the person is unable to breathe
8 on their own. And so, we would hand ventilate
9 them during that time. And then once they were
10 para -- once we had a degree of paralysis that
11 would permit the intubation, we would put the
12 tube in and put them on the ventilator.

13 So yes, hand ventilation is quite common
14 in that situation.

15 Q. How long does it take the paralytic to
16 take effect?

17 A. The timing of onset of paralytic depends
18 on the agent, depends on the dose given, and
19 depends on the route given. So you'd have to
20 give me a specific circumstance.

21 Q. How long does it take vecuronium bromide
22 to take effect?

23 A. Again, it depends on the route -- since
24 you've given me the agent, it depends on the
25 route, how rapidly it's given and the dose

1 that's given.

2 Q. So let's say it was delivered
3 intravenously.

4 A. Okay.

5 Q. Let's say it was 10 milligrams. What
6 would be -- so let's step back.

7 What would be a rapid infusion of
8 10 milligrams intravenously of vecuronium
9 bromide?

10 A. It would be to push the syringe as fast
11 as you can, and that would probably take under
12 one or two seconds.

13 Q. And so, how long would it take the
14 vecuronium bromide to take effect under that
15 circumstance?

16 A. Well, the -- that's a little bit of a
17 high dose for clinical use, but it's close, so
18 let's say it's a clinical dose. We typically
19 think of the -- the onset happens pretty
20 quickly, but the maximal clinical effect will
21 occur within about two to two-and-a-half
22 minutes.

23 So you get paralysis -- you start to get
24 paralysis immediately, but it doesn't take full
25 effect for two to two-and-a-half minutes. At

1 higher --

2 Q. Is --

3 A. Sorry.

4 Q. No, I'm sorry. Keep going.

5 A. The higher the dose, the faster the
6 maximum effect will occur.

7 Q. How -- okay. So how quick can maximum
8 effect occur with vecuronium bromide?

9 A. Well, in clinical doses, clinical doses,
10 it's been shown that if you give it rapidly
11 enough, roughly a 10-milligram or 12-milligram
12 dose will take effect within about 80 seconds,
13 will have maximum effect within about
14 80 seconds. But we know that the dose --
15 there's a dose response curve in terms of
16 achieving maximum effect. So if you gave
17 higher doses than that, it would happen more
18 quickly.

19 I don't know of any clinical studies that
20 have looked at supramaximal clinical --
21 supramaximal dosage and could tell you, but it
22 would certainly be under 60 seconds if you, for
23 example, doubled the dose.

24 Q. And what is the maximum clinical dose of
25 vecuronium bromide?

1 A. I don't know. And again, the term
2 "maximum clinical dose of vecuronium" is a
3 little weird, so let me think about this for a
4 minute.

5 I can give enough vecuronium, a clinical
6 dose, like 6 milligrams, 7 milligrams of
7 vecuronium that would completely paralyze the
8 patient. It will give me a maximum clinical
9 effect, okay? That's clinical dose. So that
10 will happen in two to two-and-a-half minutes.

11 If I give more vecuronium, I don't get --
12 the maximum clinical effect is still total
13 paralysis. The maximum effect is the same. So
14 I can get that maximum effect with my 6 or --
15 between 6 and 10 milligrams. I'll just get it
16 slower.

17 Does that make sense, what I just said?

18 Q. Yes.

19 So let's quadruple that. Let's say
20 24 milligrams was injected intravenously of
21 vecuronium bromide, how quickly would you
22 expect total paralysis to occur?

23 A. I would expect total paralysis in under
24 60 seconds with that.

25 Q. Okay. And you've mentioned earlier, you

1 know, there may be instances where you can
2 ventilate to avoid the risk of a breathing
3 tube. Can you tell me what the risk of a
4 breathing tube is?

5 A. Well, the risk -- there are risks to
6 putting in a breathing tube. The first is
7 that -- a failure to get the breathing tube in.
8 You plan -- you plan to paralyze the patient
9 and you can't get the tube in after they're
10 paralyzed.

11 And so, a failure to intubate is an
12 anesthesia emergency and it's a nightmare for
13 us, because in most cases the patient was
14 breathing fine on their own before we gave the
15 muscle paralytic agent. And so, if we can't --
16 before -- if we can't either reverse the
17 paralytic agent or get -- or achieve an airway
18 in a different way, the patient will probably
19 die.

20 So that's one risk, and it's a real risk.
21 And we can't always predict when that will
22 happen, but because of that, we do an extensive
23 exam of the airway to make sure that we don't
24 see obvious reasons why it would happen.

25 A second risk is that in between the time

1 we give the muscle relaxant and we're waiting
2 for it to work -- muscle paralytic agent, and
3 they're waiting for it to work, in the time we
4 get the tube in, something happens to put
5 debris down the airway. So the patient can
6 vomit or regurgitate, and those are two
7 different things, into the airway and contents
8 from the stomach can go down into the lungs and
9 cause an immediate inflammation and destruction
10 of lung tissue, and that can then lead to death
11 or pneumonia and serious illness.

12 It isn't always stomach contents that
13 we're worried about. It can also be blood, for
14 example, that can happen, as well, but the
15 typical one we worry about is stomach contents.
16 And so, we tend to treat patients who have a
17 risk for doing that, a known risk for doing
18 that, differently in the way that we intubate
19 them.

20 Then once -- the other risks of
21 intubation are damage to the airway during
22 intubation, which is not common, but it's not
23 exceedingly rare, where the action of either
24 putting the laryngoscope in or putting the tube
25 in causes tearing, injury, bleeding, scarring

1 in the airway.

2 One of the common cases we take care of
3 at the University of Washington is subsequent
4 surgeries to deal with the scarring in a
5 damaged airway from a breathing tube. And it
6 isn't that -- I want to emphasize it isn't that
7 that condition is common, but we are a center
8 that takes care of that kind of problem, so we
9 see the aftermath of that a lot.

10 And then there's risk in some patients
11 that they may become dependant on a breathing
12 tube and we will not be able to get the
13 breathing tube out, that they will then require
14 that breathing tube for an extended period of
15 time to manage their breathing after surgery,
16 or in the ICU that they may require it
17 indefinitely.

18 So again, not an all-inclusive list of
19 complications, but those should give you an
20 idea of what they are. So we don't take the
21 idea of intubating someone lightly, and we do
22 it only when it's indicated, when it's needed.

23 Q. That's helpful.

24 Kind of jumping in a different direction
25 off something you said, so is the hospital you

1 work at -- do we call it the University of
2 Washington? Is that kind of what you
3 colloquially referred to it as, or does it have
4 another name?

5 A. I'm -- where I specifically work is the
6 University Medical Center, since we have five
7 hospitals and each hospital is dedicated to
8 slightly different issues -- I shouldn't say
9 dedicated. They have -- they have more --
10 their cases have slightly different types.

11 Q. Okay. So University Medical Center, is
12 that where you work?

13 A. Yes.

14 Q. Okay. And it's associated with the
15 University of Washington?

16 A. Yeah. It's the central hospital for
17 University of Washington.

18 Q. And has that -- since you started
19 practicing there -- which was in the '80s; am I
20 correct?

21 A. Yeah.

22 Q. Since you started practicing there, has
23 it always been called University Medical
24 Center?

25 A. Yeah, University -- the full name is

1 University of Washington Medical Center, and
2 it's been called that as long as I've been at
3 the university, which would be since 1973.

4 Q. Okay. And at University Medical Center,
5 are there certain types of patients that you
6 specialize in or certain types of procedures
7 that are specialize in?

8 A. We do a lot of bread-and-butter cases and
9 a lot of neuro cases, but a large portion of
10 the patients that we work with are cancer
11 patients and cardiac patients. So we do a lot
12 of oncology procedures and heart procedures, as
13 well.

14 And then in those bread-and-butter cases,
15 the patients we're doing -- the patients we're
16 taking care of will usually have those medical
17 conditions. We do have a smaller number of
18 healthy outpatients. We do have an outpatient
19 surgery center up the street, for example, but
20 the hospital proper generally deals with those
21 kinds of patients.

22 Q. So is it fair to say most of your
23 patients have comorbidities?

24 A. It's very fair to say that, yep.

25 Q. And do you work at any other hospital,

1 other than University Medical Center?

2 A. Not at this time, no.

3 Q. And you have in the past?

4 A. Yes.

5 Q. When was the last time you worked at
6 another hospital besides University Medical
7 Center?

8 A. Well, I mean, I've worked at other
9 hospitals. The last other hospital I worked at
10 was the -- a series of hospitals that was
11 covered by the anesthesia group I worked in
12 for -- called Pacific Anesthesia that I worked
13 until 2008.

14 I've worked, however, also at the
15 University -- at the Seattle Cancer Care
16 Alliance operating rooms, which isn't
17 technically a hospital. It's a multispecialty
18 medical clinic.

19 Q. And what are the specialties at that
20 medical clinic?

21 A. It's a cancer hospital -- cancer medical
22 center. It's associated with the university.
23 We have what's called SCCA, the Seattle Cancer
24 Care Alliance, which is really a melding of the
25 University of Washington with the old -- a

1 place called the Fred Hutchinson Cancer
2 Research Center. So it deals with cancer
3 patients from around the world.

4 Q. Other than what we've talked about so
5 far, presently do you have any other
6 medical-related employment?

7 A. No.

8 Q. Okay. And in 2021, did you have any
9 other medical-related employment, other than
10 what we've talked about?

11 A. No.

12 Q. Are you board certified, Dr. Van Norman?

13 A. I'm board certified in both internal
14 medicine and in anesthesiology.

15 Q. And roughly how long have you been board
16 certified in both those specialties?

17 A. Thank you for saying roughly. It's --

18 Q. Decades? We can stop at decades if
19 that's the answer.

20 A. The 1980s, let's say -- let's say that.
21 It might be 1990 that I formally got my
22 anesthesia board certification, but it would be
23 in that time frame.

24 Q. And do you belong to any professional
25 associations, Dr. Van Norman?

1 A. I belong currently to the Royal Society
2 of Medicine and also to the International
3 Academy of Law and Mental Health. I don't
4 currently belong to any other professional
5 societies, but I have in the past.

6 Q. What is the Royal Society of Medicine?

7 A. It's sort of the equivalent of the AMA
8 for Great Britain.

9 Q. And how long have you been a member of
10 the Royal Society?

11 A. I'm not sure. I'd have to look at my CV.
12 It's been -- it's been quite a while, but I
13 don't remember off the top of my head.

14 Q. Do you practice medicine in Great
15 Britain? Can you explain why you're a member?

16 A. It is kind of unusual, isn't it?

17 I don't practice in Great Britain, but
18 they -- I have many close colleagues and, in
19 fact, have trained some physicians, some
20 anesthesiologists who practice in London.

21 The reason I belong to the society is
22 it's a really dedicated historic and potent
23 education society for medicine. So their
24 meetings are really about education and not --
25 not as much political. And so not only do I

1 have very close colleagues and my own trainees
2 that belong to the society, but I've had --
3 I've -- for example, I've presented in London
4 for various meetings and things, and so I've
5 had dealings with them through that.

6 Q. And at one point, did you belong to the
7 American Society of Anesthesiologists?

8 A. I did, yes, I did for many years. In
9 fact, I served for 19 years, I think it was, on
10 the American Society of Anesthesiologists'
11 committee on ethics and I chaired that
12 committee. I was in the SA leadership on that
13 committee.

14 Q. When did you cease to belong to the
15 American Society of Anesthesiologists?

16 A. I don't remember the exact year. Again,
17 it's a few years ago. I want to say 2013 or
18 so, but I -- it's on my CV if you want to look
19 at it, yeah.

20 Q. And why did you cease to belong or stop
21 belonging to the ASA?

22 A. The American Society of Anesthesiologists
23 is a heavily political organization. They do
24 have educational meetings and sponsor them.

25 And it's probably because being on the

1 committee on ethics, I was exposed more to the
2 political side of the ASA than to the
3 clinical -- than probably many people ever get.
4 And they had a -- let's say they had a mission
5 that I just didn't agree with.

6 And at the -- at the time, and I can't
7 speak to what their mission is now, I felt
8 heavily that we were pressured to put money
9 issues ahead of patient care. And I didn't
10 like that, I didn't feel it was appropriate. I
11 went -- I entered leadership in part to see if
12 we could influence that, and it was a very
13 frustrating time.

14 And so, eventually I decided that I --
15 and a lot of the tuition -- not the tuition,
16 the membership dues were quite high, meaning
17 that I was giving a substantial amount of money
18 to a political cause, and I really didn't agree
19 with that. So I withdrew for that reason.

20 Q. And do you also teach medicine?

21 A. I do.

22 Q. Okay. Are you a professor?

23 A. I am.

24 Q. Okay. Are you a full-time professor or
25 an adjunct professor?

1 A. I'm a full professor of anesthesiology
2 and pain medicine. I'm an adjunct professor of
3 bioethics.

4 Adjunct -- I can't speak to what all
5 academic centers -- how they use the terms, but
6 at the University of Washington, you're a full
7 professor in the department that pays your
8 salary. And then if you become a professor,
9 meaning you meet all the academic requirements
10 and teaching requirements in an alternative
11 department but that they don't contribute to
12 your salary, you are an adjunct professor.

13 You have to go through the exact same
14 vetting and voting for professorship in the
15 non-home department as you would for your home
16 department. So every year, just like they do
17 in my own department, they go through and
18 review my CV and say, do we still want you in
19 your non-home department as a full professor,
20 so...

21 Q. So let me break that down and just make
22 sure I'm tracking.

23 Is your home department anesthesiology,
24 and your non-home department is bioethics?

25 A. Yes. The home department -- the

1 department that pays my salary is the
2 department of -- through which my salary flows.
3 There are actually a couple of funding sources
4 that -- but that's technical.

5 My home department is the one through
6 whom my salary flows. That's the Department of
7 Anesthesiology and Medicine. But I carry the
8 adjunct appointment in bioethics because I meet
9 all of their standards for teaching and
10 professor, and I participate actively in their
11 department in teaching and publication, but
12 they don't pay my salary.

13 Q. Did you teach any bioethics classes in
14 2021?

15 A. Yes, I have -- well -- yes, I regularly
16 give lectures to both University of Washington
17 undergraduates. These are not medical school
18 students. There are some undergraduate
19 bioethic -- medical bioethics courses to
20 graduate students that also have a similar line
21 of courses for their bioethics degree. And I
22 also give lectures and classes to our own
23 residents in bioethics. So yes, to all -- to
24 all level -- all three levels.

25 Q. When you say classes and lectures, are

1 these isolated, like, one-time or weekend
2 things, or are these semester-long courses?

3 A. In the cases that I've mentioned, they --
4 it's kind of -- it's not one or the other.

5 For example, I'm part of a continuing
6 lecture series in informed consent for
7 undergraduates. So I give that lecture once or
8 twice a year, but it's part of a continuing
9 course.

10 In case of the anesthesia residents, we
11 have a series of bioethics lectures that I give
12 over time to them. So while they're not given
13 in a specific semester, there's a specific set
14 of courses that they get. In fact, I'm
15 supposed to teach one Thursday night. We do
16 night -- these days with the pandemic, we do
17 night classes. So I'm supposed to teach one on
18 Thursday night.

19 Q. Are those classes online, or are you --

20 A. Well, we do them by Zoom. They're -- we
21 don't meet together, but it's -- it's like a
22 classroom, but it's on Zoom.

23 Q. Okay. How long have you taught medical
24 ethics?

25 A. Since at least the mid '90s. The mid

1 '90s, yeah.

2 Q. Have you delivered any lectures on
3 whether physicians should participate in lethal
4 injection?

5 A. I have, and I've participated in debates,
6 yeah.

7 Q. About how many lectures and debates would
8 you estimate you've participated in?

9 A. Total or on that topic?

10 Q. On that topic, on whether physicians
11 should participate in lethal injection
12 executions.

13 A. I think over the course of my career,
14 perhaps three.

15 Q. And do you have an opinion on whether
16 physicians should participate in lethal
17 injection?

18 A. I do.

19 Q. What is that position?

20 A. My position is the same as the American
21 Society of Anesthesiologists, the AMA and the
22 American Board of Anesthesia, physicians
23 shouldn't participate in lethal injection.

24 Q. And why is that?

25 A. You want the whole lecture?

1 Q. Give me the CliffsNotes. Just give me a
2 couple bullet points.

3 A. The CliffsNotes are this, that neither
4 lethal injection nor any form of execution
5 requires physician participation. They don't
6 require anyone who is trained in medicine to
7 use their medical skills to accomplish them,
8 number one.

9 And number two, there is a high concern
10 that when physicians start to actually
11 participate and use their medical skills, they
12 violate the primary oaths of being -- of
13 wanting to, you know, benefit patients.
14 Prisoners are not patients, and executions are
15 not medical procedures. And so, using medical
16 skills to participate in nonmedical procedures
17 is unethical.

18 In addition, there is a real tendency for
19 that participation to affect professional and
20 lay trust in the medical profession. For that
21 reason, all of the western medical societies,
22 all western medical societies, and by that I
23 mean European and American, condemn physician
24 participation in lethal injection; although all
25 of them also take the stance that they make

1 no -- they take no opinion on lethal injection
2 itself. They just argue with whether a
3 physician should be participating.

4 Q. Have you ever witnessed an execution,
5 Dr. Van Norman?

6 A. I have not.

7 Q. And do you have any blogs,
8 Dr. Van Norman?

9 A. I do not.

10 Q. Have you --

11 A. Well --

12 Q. Oh.

13 A. I was going to -- if you're going to ask
14 me did I ever have any blogs, I used to write
15 some poetry and I had a blog back in the '90s.
16 Please don't go look it up.

17 Q. We will not.

18 Have you ever had any blogs that are
19 related to your professional experience?

20 A. No, I have not.

21 Q. And are you on social media,
22 Dr. Van Norman?

23 A. I exchange free items on Buy Nothing
24 Magnolia on Facebook, and I occasionally
25 communicate with friends that way.

1 I think I have a Twitter account, but I
2 don't use it. It irritates the heck out of me.
3 I never check it.

4 I don't have a Snapchat or anything like
5 that.

6 Q. Safe to say no TikTok?

7 A. No, although I will say when I see a
8 TikTok posted on CNN that's funny, I will look
9 it up.

10 Q. Understood.

11 A. But no, I -- so Facebook, but not even
12 really that. I don't do a lot of -- I don't do
13 a lot of that, other than with a handful of
14 friends where we sometimes will use their
15 messaging function to say, what's up, you know.

16 MR. MITCHELL: Can we go off record
17 real quick?

18 MR. KURSMAN: Do you want to go off
19 the record and discuss something with me,
20 Mr. Mitchell, or do you just want to go off the
21 record for a few minutes?

22 MR. MITCHELL: I just wanted to go
23 off the record and go on a ten-minute break.

24 MR. KURSMAN: Oh, yeah. Sure.
25 Absolutely.

1 MR. MITCHELL: That was it.

2 (Short break.)

3 BY MR. MITCHELL:

4 Q. Dr. Van Norman, we just got back from
5 break. Did you speak with anyone during the
6 break?

7 A. I spoke for a few seconds with
8 Mr. Kursman.

9 Q. What did you speak with Mr. Kursman
10 about?

11 A. Just checked in to see if there's
12 anything either of us needed. It wasn't a long
13 conversation, just a few seconds.

14 Q. Was there anything Mr. Kursman needed?

15 A. No.

16 Q. Was there anything you needed?

17 A. Nope.

18 Q. Did you speak about anything else with
19 Mr. Kursman?

20 A. Nope.

21 Q. Did you speak with anyone else during the
22 break?

23 A. No, there's no -- no one here.

24 Q. Did you review anything during the break?

25 A. No.

1 Q. Did you prepare an expert report in this
2 case, Dr. Van Norman?

3 A. I did.

4 Q. And is this a copy of your expert report
5 in this case?

6 A. It appears to be, yes. Obviously, I --
7 you'd have to scroll through the whole thing,
8 but I think it is, yeah.

9 Q. Do you see the date, November 17th, 2021?

10 A. I do.

11 Q. And prepared for Alex Kursman?

12 A. I do.

13 Q. And is that your signature on Page 34?

14 A. It is.

15 Q. Also dated November 17th of '21?

16 A. Yep, that's correct.

17 MR. MITCHELL: Can we mark this as
18 Exhibit 2, please.

19 (WHEREUPON, a document was marked as
20 Exhibit Number 2.)

21 BY MR. MITCHELL:

22 Q. Did you review this report prior to
23 submission, Dr. Van Norman?

24 A. Yes.

25 Q. Okay. Did you draft this report from

1 scratch or did you rely on any previous expert
2 reports you've used?

3 A. I drafted it from scratch, but it may
4 contain similar statements to previous reports
5 I've submitted.

6 Q. Okay. What prior reports would those be?

7 A. I had an expert report submitted for a
8 case in Mississippi and one in Arkansas.

9 Q. Were those lethal injection -- were those
10 cases involving challenges to state lethal
11 injection procedures?

12 A. They were. I'm just -- I'm trying to
13 remember if Arkansas was actually a federal
14 case or not, but I believe they were all state.

15 Q. And those two cases were Mississippi and
16 Arkansas?

17 A. That's correct.

18 Q. Have you participated in any other cases
19 in which execution procedures were challenged?

20 A. Yes.

21 Q. How many other cases?

22 A. Two or three, I believe. Not more than
23 three, it might just be two.

24 Q. And where were those other cases?

25 A. Well, one of them was an ongoing case on

1 the -- regarding the federal execution protocol
2 and not a state case. It was about the
3 execution protocol itself. And then the other
4 one I'm remembering was a report prepared for a
5 Florida case.

6 Q. I'm sorry, can you say that one more
7 time, a what?

8 A. I did prepare a report for a Florida
9 case.

10 Q. And do you remember when that was?

11 A. You know, I don't. It would have been
12 several years ago. It wasn't -- it's not -- it
13 wasn't this year.

14 Q. It wasn't in 2022?

15 A. Oh, no, it wasn't in 2022. I haven't
16 done any -- submitted any expert reports in
17 2022.

18 Q. Would it have been in 2021?

19 A. You know, I'm trying to remember if
20 they -- if -- it's -- I think I was asked for
21 an update on a report in 2021, but it might
22 have been 2020. I'm not sure of the year on
23 it.

24 Q. And this would be the Florida litigation?

25 A. That's correct, yeah.

1 Q. Have you testified as an expert in 2022
2 beside this deposition?

3 A. No.

4 Q. Did you testify as an expert in 2021?

5 A. I testified in January of 2021 in the
6 federal case that I mentioned in a -- the D.C.
7 District Court of Appeals.

8 Q. Going back to this Exhibit 2, your expert
9 report in this case, did you personally sight
10 check this document before submitting it?

11 A. Yes.

12 Q. Okay. When did you perform that sight
13 check?

14 A. It would have been before submitting it.
15 I don't know the date.

16 Q. Do you know, Dr. Van Norman, if this
17 Footnote 7 still works?

18 A. It did at the time. And, in fact, then I
19 actually submitted a package -- you know, the
20 package materials that you asked for to
21 Mr. Kursman, in which I had gone through and
22 checked all of the links that I used in this,
23 and they were all active at the time.

24 Q. So roughly within the last 60 days, this
25 link would have worked?

1 A. It should have, yes. And I personally
2 checked that, yes.

3 Q. And it says access June 14th, 2018?

4 A. Yeah, I didn't update that report because
5 that's when I first accessed it for the report,
6 but I personally checked all of the links on
7 this report when I went through to gather the
8 materials that you subpoenaed me to supply.

9 Q. So just to make sure I'm following, for
10 this report that you built from scratch, you
11 first accessed it in June of 2018?

12 A. Well, yes. I see what you're saying.
13 This probably was carried over. As I
14 mentioned, I -- the report itself, but the
15 citations I have also used in other reports.
16 And so it was accessed in 2018, but it was
17 active within the last 60 days.

18 Q. Okay. Okay.

19 What questions did Plaintiff's counsel
20 engage you to answer as an expert witness in
21 this case?

22 A. Well, can you scroll back up to the top
23 of the report, please?

24 Q. Just tell me when to stop. Do you want
25 me to go first -- let's go to the first page,

1 and then I'll scroll down.

2 A. First page and then come down a little
3 bit, because I think I listed them pretty
4 carefully. If I didn't, I'll go through and
5 say -- go ahead.

6 Okay. Well, the questions I was
7 specifically asked to address were whether
8 midazolam is an anesthetic and whether -- and
9 to talk about the effects of midazolam, both
10 clinically and in inmates in which a large dose
11 of midazolam is being given.

12 Scroll down for a moment, please, just so
13 I can see the statements, because they usually
14 address the questions they have.

15 I was asked whether midazolam has a
16 ceiling effect, whether the consciousness
17 checks used during the Tennessee protocol are
18 valid. I was asked whether vecuronium is an
19 anesthetic. I was asked what would happen if
20 someone who was sensate was given a large dose
21 of vecuronium.

22 Can you scroll down, please, a little bit
23 further. Just go a little further, please.

24 I was also asked about the effects of
25 injecting undiluted potassium into the veins of

1 a sensate person.

2 Can you please scroll a little further.

3 And I was asked to address some of the
4 movements that are being seen and reported by
5 eyewitness reports of executions. That is --
6 the big question I was asked to review was the
7 effects in a clinical and during the protocol.
8 I distinguish clinical from the protocol itself
9 because of both the circumstances in dosing of
10 midazolam.

11 Q. Were you engaged to answer any other
12 questions other than what you've mentioned?

13 A. I don't think so. If I -- I don't think
14 so. It may come up in the course of our
15 discussion, but those are the ones that I
16 recall being asked.

17 Q. When were you retained as an expert in
18 this case, Dr. Van Norman?

19 A. If you can go back and look at the
20 contract I sent you, it would be the first day
21 of the first contract. I don't remember the
22 date.

23 Q. Okay. Was it in 2021?

24 A. I believe so, yes. It might have been
25 late 2020, but it would be that or, you know,

1 early 2021.

2 Q. And is this Appendix 3 to your report a
3 list of materials that you relied upon and/or
4 reviewed in preparing this report?

5 A. Yes -- scroll down a little bit, let me
6 just see.

7 Q. Sure. I can scroll to the bottom of the
8 appendix and then come back up if --

9 A. That might be easier, if you don't mind.

10 Q. So I believe this is the bottom of the
11 appendix on Page 62, because Page 63 starts a
12 new document.

13 A. Yeah, okay. Go -- yeah.

14 Q. Tell me when to scroll down.

15 A. Well, here -- what I'll tell you is that
16 this is a list of materials that were supplied
17 to me by the Plaintiff's attorneys. So I did
18 rely upon them, but they are not the only
19 things I relied upon.

20 Q. So what did you rely on that's not on
21 these two pages?

22 A. Well, I include on these two pages things
23 like I reviewed -- I reviewed the eyewitness
24 reports of executions. I also looked at
25 autopsy reports.

1 I have a -- I had a file of 309 autopsies
2 of prisoners executed in the United States by
3 lethal injection through the -- September, I
4 believe, of 2020. And I reviewed autopsy
5 findings for those prisoners who had been
6 executed using midazolam that appeared in my
7 files at that time. So that is an additional
8 set of materials that you've been supplied
9 with.

10 And I also -- obviously, I'm aware of a
11 wide range of published articles, reviews,
12 textbooks, things like that that I also
13 reviewed that I didn't -- I don't necessarily
14 explicitly list in this appendix.

15 Q. So do you have a file of 309 autopsies of
16 prisoners executed by lethal injection?

17 A. I do.

18 Q. And did you receive that from Plaintiff's
19 counsel?

20 A. I did not.

21 Q. Did you provide that to Plaintiff's
22 counsel?

23 A. I provided to -- not all of those
24 prisoners' files are relevant to this case
25 because they don't involve the lethal injection

1 protocol, but I have supplied to counsel all of
2 the files that I used and relied upon in this
3 case.

4 MR. MITCHELL: And, Alex, is that
5 what you provided this morning?

6 MR. KURSMAN: Yes, Rob, just for the
7 record, that is what we provided to you this
8 morning.

9 MR. MITCHELL: Okay.

10 BY MR. MITCHELL:

11 Q. Dr. Van Norman, how many autopsy reports
12 did you review for this case?

13 A. I'd have to look at the report. I
14 actually did a review -- I believe it was of 25
15 autopsy reports, 23 of which were relevant to
16 this -- were relevant to my report.

17 Q. And is that this Appendix 4?

18 A. Is that 25 there? It should be, yes, but
19 let's -- let's make sure that's the 25.

20 And can you tell me -- let's see, 3, 6,
21 9, 12, 15, 18, 21 -- sorry, 3, 6, 9, 18, 21,
22 24, 25. Yes, so that is it.

23 Q. So Appendix 4 is a list of the 25 autopsy
24 reports you reviewed for this case?

25 A. That is correct.

1 Q. And you'll see, I mean, in the appendix,
2 it does say autopsy files in the --

3 A. Oh, that was cut off at the top. I
4 didn't see that, so I'm sorry.

5 Q. I'm sorry, that wasn't a trick question.

6 A. No, I just -- I didn't see the end of it
7 and realized that was the appendix. So, okay,
8 go ahead.

9 Q. So how did you receive these 309 autopsy
10 files or autopsy reports?

11 A. I -- this file was -- is a file that was
12 obtained by the Freedom of Information Act by
13 Noel Caldwell for NPR, and he has a G-drive of
14 these autopsy files and he simply gave me
15 access to them.

16 Q. Okay. Do you know -- so do you know Noel
17 Caldwell?

18 A. I do not.

19 Q. How did Noel Caldwell give you access?

20 A. It's a little bit of a long story.
21 Around the time that he was writing an article
22 for NPR, his office contacted me for an
23 interview, which I refused to give. And he --
24 in the contact, they mentioned that they had
25 the files, and through them and the fact that

1 these were also -- well, it was through them
2 and through an attorney involved in one of my
3 other cases that I received access to the
4 files.

5 Q. Now, do you know which drugs were used in
6 each of these executions for these different
7 states in Appendix 4?

8 A. All of them used midazolam. I would have
9 to go through -- I did not compile which of
10 them used -- if all of them used vecuronium or
11 if all of them -- or if some of them used
12 rocuronium. And then all of them used
13 potassium.

14 Q. And do you know whether the dosages were
15 the same for all of these different states with
16 all those different drugs?

17 A. My recollection looking at it right now
18 is that the doses were the same -- were the --
19 yes, that the doses were the same. I don't
20 remember, again, for vecuronium versus
21 rocuronium, but the midazolam dose was
22 500 milligrams in each of these.

23 Q. Was the potassium chloride dosage the
24 same in each of these executions?

25 A. I don't specifically recall, but I

1 believe it was. I just -- at this moment, as
2 we're talking, I don't recall. Most --

3 Q. Does that matter?

4 A. No.

5 Q. Why not?

6 A. Because in all cases, the dose of
7 potassium given in these executions was a fatal
8 dose and was supramaximal.

9 Q. What is a fatal dose of potassium
10 chloride?

11 A. You mean what is the actual fatal dose or
12 what were the actual doses in these cases?

13 Q. What is the actual fatal dose?

14 A. Well, it depends -- I'm going to go back
15 to clinical pharmacology. It depends on how
16 it's given and into what vein. A relatively
17 small dose of potassium can be fatal if given
18 into a central vein, but what I'm saying is
19 that there was a minimum of 150 milligram --
20 milliequivalents of potassium given into a
21 peripheral vein, which would be fatal.

22 We would not ordinarily give more than 40
23 milliequivalents through a peripheral vein,
24 concerned that it would cause a fatal cardiac
25 arrhythmia. But I don't know an -- I can't give

1 you an absolute number because it depends on
2 circumstances and how it's injected.

3 Q. What circumstances does it depend on?

4 A. How rapidly it's injected, which vein
5 it's injected in and how dilute it is.

6 Q. Does it depend on any other
7 circumstances?

8 A. Give me a "for instance."

9 Q. Well, I'm asking you. I'm not sure if
10 there are, but I'm just curious if there are
11 other circumstances in which the fatality of a
12 dosage of potassium chloride delivered
13 intravenously would hinge on --

14 A. Well, clinically, and I'm not talking
15 about executions now, I'm talking about
16 clinically, the dose that would be fatal would
17 also depend on the potassium level that the
18 patient already intrinsically has. So there
19 are some clinical conditions that lead to acute
20 rises in potassium, and it would take a much
21 smaller dose then to cause a cardiac arrest by
22 adding potassium to that.

23 Cardiac -- I'm sorry.

24 Q. What were you going to say,
25 Dr. Van Norman?

1 A. I was just going to say that cardiac
2 arrest depends on the level of potassium in the
3 system. And so, if you already have a high
4 level of potassium, it doesn't take as much to
5 get -- to get to a fatal level in the system.

6 Q. Do you know -- going back to Noel
7 Caldwell, do you know whether Noel Caldwell
8 made one Freedom of Information Act request or
9 a number of different Freedom of Information
10 Act requests?

11 A. I do not -- I do not know.

12 MR. KURSMAN: Yeah, objection to
13 form.

14 MR. MITCHELL: What's the basis for
15 your objection, Alex?

16 MR. KURSMAN: Just that it's calling
17 for hearsay information.

18 BY MR. MITCHELL:

19 Q. Dr. Van Norman, have you ever been
20 present when an autopsy was performed?

21 A. Certainly, yes.

22 Q. And have any of those autopsies you were
23 present for been when someone was executed?

24 A. No.

25 Q. And is this -- Appendix 5 to your report,

1 I believe it's two pages, is this a log of --
2 or is this a table compiling logs of
3 executions?

4 A. Yes.

5 Q. Did you put this log together or this
6 table together, we'll call it?

7 A. This is a -- yes.

8 Q. When did you compose this table?

9 A. I don't remember exactly when. It's
10 recently.

11 Q. Like in 2021?

12 A. Oh, yes. I'm sorry, yes.

13 Q. For this expert report?

14 A. Correct.

15 Q. Okay. Did anyone help you compose this
16 table?

17 A. No.

18 Q. And did you review each of these logs on
19 Pages 64 and 65 of your report in anticipation
20 of creating this table?

21 A. I did.

22 Q. Did you review these logs for any other
23 litigation?

24 A. No.

25 Q. Does this data affect your report that's

1 contained in these logs in Appendix 5?

2 A. It does, yes.

3 Q. How does it affect your report?

4 A. In terms of understanding -- it affected
5 my analysis of the questions I was asked
6 because among the data that's contained here is
7 included the injection times of the various
8 drugs, together with the timing of cardiac
9 arrest, the time -- not just the time of
10 declared death but the time of witnessed
11 cardiac arrest when it happened.

12 This also contains information about
13 approximately when the so-called consciousness
14 checks occurred during the execution process
15 and how long between the end of the first
16 injection and the second injection started, so
17 how long the time frame was between the
18 injection of the first drug, the finish of the
19 first drug injection, the timing of the
20 consciousness check and the beginning of the
21 second drug, which was vecuronium. Drug two is
22 vecuronium, by the way.

23 And I was asked, for example, whether --
24 about potassium, injection of potassium and
25 timing of death and whether vecuronium hastened

1 death. That was an additional question I was
2 asked to address that I forgot in your previous
3 question. And the timings on this table helped
4 to illustrate my answer -- the reasoning for my
5 answers for them.

6 Q. How many inmates are on this report? And
7 I can scroll whenever you ask me to.

8 A. Count them out, 3, 6 -- sorry. I -- my
9 glasses don't do as well with the computer. 3,
10 6, 9. Go ahead. 12, 15, 18, 21 or 22.

11 Q. Okay. And this isn't the same list as
12 Appendix 4, is it?

13 A. That is correct; it is not the same list.

14 Q. Okay. For instance, there's three
15 inmates from Ohio here?

16 A. Correct.

17 Q. And if we scroll up to Appendix 4,
18 there's no Ohio executions; is that correct?

19 A. That's correct.

20 Q. Likewise, Appendix 4 has three inmates
21 from Arkansas?

22 A. I assume so. I mean, we can look at it.
23 Looks like it's three there, might -- could be
24 four, yeah.

25 Q. And you see the first four are Arkansas

1 here in Appendix 5?

2 A. Correct.

3 Q. Okay. Now, going up to Appendix 4, from
4 the autopsy files, were you able to tell which
5 inmates had a heartbeat at the time of the
6 potassium chloride administration?

7 A. I was not, from the autopsy files.

8 Q. Okay. Were you from the execution logs?

9 A. Yes.

10 Q. How so?

11 A. Well, in the execution logs, there were
12 two different kinds of notation -- well, two or
13 three different kinds of notations made. In
14 many cases, notice where I say "witnessed
15 cardiac arrest." That second to the last
16 column from the right says, "Witnessed cardiac
17 arrest or declaration of death."

18 And when I say "CA," it's -- that's when
19 this is witnessed, and what we say is the --
20 and the "D" is for declaration of death.

21 So not only through those logs at times
22 did people say "the heart has stopped," "the
23 heart has ceased," "cardiac arrest" or some
24 other statement as to the moment that that
25 occurred, but there was also an official time

1 of death put on those logs.

2 And I've noted where the -- and
3 sometimes -- sometimes one was present but not
4 the other, and sometimes both were present. So
5 you can read that column and see which -- where
6 there were eyewitness reports of the stoppage
7 of the heart, and there were eyewitness reports
8 of the declaration of death.

9 Q. So, for instance, if we look here at
10 Thomas Knight, third from the bottom, where it
11 says "D," is that when death was pronounced?

12 A. I believe so. I'd have to look back at
13 that log, but that's -- that's what that's
14 intended to mean.

15 Q. Okay.

16 A. And you can see here, if you look, the
17 end of the injection of drug three, which is
18 potassium, was 2,000 -- was 8:14. Time of
19 death was 8:17. And the time from the end of
20 potassium to either one of these is three
21 minutes, so that would be the declaration of
22 death.

23 Q. Okay.

24 A. Yeah.

25 Q. Give me just a moment.

1 So, Dr. Van Norman, looking here at
2 Page 28 of your report, you talked about
3 Appendix 4, which is the 22 prisoner log of
4 autopsy files you reviewed, and you said, "In
5 every single case, the prisoner was still alive
6 and had a heartbeat at the time of potassium
7 chloride administration."

8 A. I'm sorry, say that again for me.

9 Q. Sure.

10 I'm looking at this -- this second
11 sentence on Page 28 of your report.

12 A. Uh-huh.

13 Q. It says, "In every single case, the
14 prisoner was still alive and had a heartbeat at
15 the time of potassium chloride administration."
16 Did I read that correctly?

17 A. You did.

18 Q. And that's for Appendix 4, the log of 22
19 prisoners?

20 A. Go back, that might be a misprint. Can
21 you show me Appendix 4 again? I might have had
22 a misprint there that I missed.

23 Q. This is Appendix 4.

24 A. And that's the autopsies. No, that
25 should have been Appendix 5 then, I think.

1 That -- I think that was a typo.

2 MR. KURSMAN: And can I interject for
3 a second, Rob? You -- someone from your office
4 sent Exhibit 2 to myself and co-counsel, being
5 Dr. Van Norman's report. It did not -- this
6 e-mail did not go to Dr. Van Norman. So what I
7 will do is I will forward it to her so she can
8 scroll through while talking to you.

9 MR. MITCHELL: Sure.

10 MR. KURSMAN: Okay.

11 MR. MITCHELL: Do we want to take a
12 break for a second for Dr. Van Norman to -- I
13 don't know if her e-mail's up so she can open
14 the report and have it in front of her?

15 THE WITNESS: I think I can open it.
16 Give the e-mail a moment to come through, so...

17 MR. MITCHELL: And, Alex, if -- we
18 don't have Dr. Van Norman's e-mail, to the best
19 of my knowledge. If you want us to e-mail her
20 directly, we can, but we didn't want to
21 communicate with her without your blessing,
22 so...

23 MR. KURSMAN: Well, how about we just
24 keep doing it you send it to us, and then I'll
25 just notify you that I'm forwarding it to her.

1 So I did forward it to her.

2 THE WITNESS: Yeah, let -- sorry.

3 Let me check and see if it's come through.

4 MR. MITCHELL: Okay.

5 THE WITNESS: It often takes a couple
6 minutes. Yeah, looks like it has. Give me a
7 moment to download.

8 All right, I have it up. Let me
9 clean up my screen here.

10 And now, I'm going to just
11 superimpose the report right over the screen
12 where you have the report. And if you tell me
13 where we want to -- you want me to direct my
14 attention, I'd be happy to scroll to it.

15 BY MR. MITCHELL:

16 Q. Sure. Page 28, please.

17 A. Okay.

18 Q. Do you see -- there's a sentence we
19 talked about a second ago, the sentence that
20 says, "In every single case, the prisoner was
21 still alive and had a heartbeat at the time of
22 potassium chloride administration."

23 A. Yes.

24 Q. And I think we've established that that
25 was actually Appendix 5, not Appendix 4 that

1 you meant.

2 A. I think so. Let me just, now that I can
3 scroll, take a quick look, if you don't mind,
4 but I think that's just a typo.

5 Yes, I -- that's -- that has to be a typo
6 because the logs are Appendix 5.

7 Q. And so, for instance, looking at the
8 Arkansas executions, the first four in
9 Appendix 5, how do we know -- or how do you
10 know that there was a heartbeat at the time the
11 potassium chloride was administered?

12 A. I confess, in those cases, I don't have a
13 timing for the third drug, so I can't state for
14 sure, although it would certainly be
15 nonsensical to inject potassium into a patient
16 who is dead. But I -- I admit that I don't --
17 now that you asked me, I notice that the third
18 drug doesn't have a start and stop time.

19 Q. So would you agree that on Page 28, your
20 statement "in every single case, the prisoner
21 was still alive and had a heartbeat at the time
22 of potassium chloride administration," that is
23 not reflected by the data you reviewed?

24 A. I agree that the data reflects that in
25 every single case where the timing of the third

1 drug is noted, the patient had a heartbeat at
2 the timing of the potassium injection. So
3 that's -- the fact that I admit to is that that
4 is the case.

5 Q. And how do we know that the patient had a
6 heartbeat every time a third drug was injected
7 on the one where the timing of the third drug
8 is stated?

9 A. Because in cases where there was a
10 cardiac arrest with potassium -- in cases where
11 there -- let me go back to the logs, I'm sorry.
12 I'm trying to scroll and talk at the same time,
13 I'm going to make myself nauseated.

14 In timing -- in cases where the timing of
15 the potassium injection is noted, there is a
16 subsequent notation that is later than the
17 start of the potassium injection of either
18 death or cardiac arrest.

19 Q. And so, for instance, if we look at
20 Thomas Knight, third from the bottom on
21 Appendix 5.

22 A. Okay, let me see if I can turn this up.
23 In Appendix -- oh, Appendix 5, sorry. Hang on.

24 Q. Dated January 7th, 2014 --

25 A. Well, I'm sorry, that -- here's from the

1 bottom on Page 1 of Appendix -- I was looking
2 somewhere --

3 Q. Yes, I'm sorry.

4 A. Yeah.

5 Q. So what in Thomas Knight's -- the entry
6 for Thomas Knight tells us that Thomas Knight
7 had a heartbeat when the potassium chloride was
8 administered?

9 A. Because the medical examiner or whoever
10 was called upon to determine that he was dead
11 said he was not dead until 18:45, and the
12 potassium injection began at 18:39.

13 Q. Could he have been dead at 18:44?

14 A. Not if you have a competent medical
15 examiner.

16 Q. But what if the medical examiner didn't
17 check him until 18:45?

18 A. I -- the -- since -- all I can say is
19 that the medical examiner says this prisoner
20 was not dead until 18:45, and the potassium
21 injection began at 18:39.

22 Q. The medical examiner said that the
23 prisoner didn't die until 18:45, or 18:45 was
24 when the medical examiner pronounced death?

25 A. The time of death is the time when the

1 patient officially dies, and that is declared
2 by the medical -- I -- let me back up and say,
3 we keep talking about the medical examiner, and
4 I'm not meaning your state medical examiner.

5 I'm meaning the person who examines the
6 inmate for death, and that person has to
7 certify when that person died as the time of
8 death, and that person certified that this
9 person died at 18:45. And so, they made an
10 official statement that this patient was not
11 dead until 18:45.

12 Q. But did -- was there anything in the data
13 you relied on saying that the individual was
14 alive at 18:44?

15 A. Yes. The logs demonstrate that they were
16 not dead until 18:45.

17 Q. And how do the logs demonstrate that?

18 A. The medical examiner declared that that
19 is when the patient -- when the inmate died.

20 Q. And so, my question is, could the inmate
21 have died sooner but not been examined?

22 A. Then the medical examiner should not have
23 given the time of death as 18:45.

24 Q. But it's possible?

25 A. Only if you have an incompetent medical

1 examiner.

2 Q. And why would that be incompetent?

3 A. Because the medical examiner provides a
4 declaration of when the inmate died. And if
5 they say that the inmate died at 18:45, we have
6 to rely on that. We can't make up something
7 else.

8 Q. Okay. Now, Dr. Van Norman, going up to
9 Appendix 1, is that your CV?

10 A. Let me scroll. Hang on. I think it is,
11 yes, but let me just be sure. I don't want to
12 make another mistake of, you know, mistaking
13 four for five, so...

14 Hang on, hang on.

15 Yes.

16 Q. Okay. And is this CV up to date?

17 A. It is missing a couple of publications
18 that have occurred in the last 60 days, but
19 other than that, it is up to date, yes.

20 Q. And if we scroll down to Page 60 of your
21 report, Appendix 2, a list of your depositions
22 and court testimony in the last four years? Do
23 you have that in front of you?

24 A. I'm getting there, just a moment. Sorry,
25 it's taking a minute.

1 Yes, I'm there.

2 Q. Is Appendix 2 up to date?

3 A. Let me see. It should be, but let me
4 just look at what's on here to make sure it is.

5 Yes, that is up to date.

6 Q. Prior to today, when was the last time
7 you testified in a lethal injection case?

8 A. January of 2021.

9 Q. And was that the federal case you talked
10 about?

11 A. Yeah, that's the Roane v. Barr for the
12 Washington, D.C. Federal Court of Appeals.

13 Q. And before that case, what was the last
14 lethal injection case you testified in?

15 A. That was in 2018, McGehee v. Asa
16 Hutchinson.

17 Q. Okay. What was the first lethal
18 injection case you testified in?

19 A. 2018, Jason McGehee v. Asa Hutchinson.

20 Q. How did you get involved in that case?

21 A. I was contacted by an attorney on the
22 case, a Mr. Williams from Arkansas.

23 Q. Okay, just out of the blue?

24 A. Yeah, pretty much. I don't remember -- I
25 don't remember how he came to get my name. I

1 was not expecting any kind -- I wasn't
2 expecting a contact, so...

3 Q. And have you ever served as an expert
4 witness on behalf of a State in an execution
5 case?

6 A. On behalf of the State, oh, you mean not
7 on behalf of the inmates?

8 Q. Correct.

9 A. Yeah, okay. No, I have not.

10 Q. Okay. Would it be consistent with your
11 ethical obligations to do so?

12 A. It wouldn't be inconsistent.

13 Q. So it would be consistent? It would be
14 acceptable?

15 A. It would be -- it would be acceptable --
16 are you asking me is it ethical to provide
17 expert witness for the State in lethal
18 injection -- sure.

19 Q. Yes. Yes.

20 A. Sure, there are ways you could do it
21 unethically, but it certainly could be -- would
22 be ethical to do so.

23 Q. Okay. Now, your report contains 13
24 statements starting on Page 4; is that correct?

25 A. I believe so, yes.

1 Q. Do you still stand by these 13 statements
2 today?

3 A. I believe so. Let me -- let me just
4 quickly peruse them. I don't recall having any
5 new information, so let me just look through.

6 Yeah, I would still stand by them.

7 Q. Since submitting this report on
8 November 17th, has your expert opinion
9 regarding any of these 13 statements changed in
10 any way?

11 A. Not that -- no, not that I'm aware of.

12 Q. Okay. And do you know what drugs are
13 used in Tennessee's protocol, Dr. Van Norman?

14 A. The Tennessee protocol, as is stated up
15 in the -- on Page 4, at least the one that was
16 supplied to me, consists of midazolam,
17 vecuronium and potassium chloride.

18 Q. And what amount of midazolam does
19 Tennessee's protocol call for?

20 A. It calls for a total of 500 milligrams of
21 midazolam, given as two syringe-fulls of --
22 50 CCs of syringe-fulls of 5 milligrams per ML
23 of midazolam.

24 Q. Okay. And how many milligrams of
25 vecuronium bromide does Tennessee's protocol

1 call for?

2 A. It calls for a total of a hundred
3 milligrams vecuronium, also given as an
4 injection of two syringes, each containing --
5 two 50 CC syringes, each containing one
6 milligram per ML of vecuronium.

7 Q. And how much potassium chloride is called
8 for in Tennessee's protocol?

9 A. It calls for a total injection of 240
10 milliequivalents of undiluted potassium
11 chloride drawn up into two 60 CC syringes.

12 Q. And you can close out of your report.
13 Those are the only questions I have for you at
14 the moment based on that.

15 A. There you are, behind my report.

16 Q. So let's talk through the drugs a little
17 bit. What is midazolam?

18 A. Midazolam is a benzodiazapine.

19 Q. Okay. And you're familiar with it from
20 your medical practice; is that right?

21 A. Certainly, yes.

22 Q. Is midazolam also an anticonvulsant
23 agent?

24 A. But -- well, not technically. Midazolam
25 does raise the seizure threshold, meaning that

1 it makes people -- it -- it decreases the
2 probability that someone will have a seizure,
3 but you can't use it for treatment of chronic
4 seizures. So I would not call it -- it is not
5 in the class of anticonvulsants, but it has an
6 effect that reduces seizures.

7 Q. Does -- is one of the effects of
8 midazolam that it can reduce involuntary
9 movement?

10 A. Reduce involuntary movement. Some, but
11 it doesn't have a power -- powerful effect
12 on -- as powerful effect on involuntary
13 movements as voluntary movements.

14 Q. Does midazolam cause pain?

15 A. Midazolam itself was -- is a -- the
16 benzodiazepines all are uncomfortable to inject
17 IV, depending upon the dose and the
18 concentration.

19 Midazolam causes -- is a water-soluble
20 one that causes much less pain, for example,
21 than Valium.

22 Q. Okay. Upon injection?

23 A. Correct.

24 Q. Can injection of midazolam cause pain?

25 A. Yes.

1 Q. How so?

2 A. It has -- I don't know the actual
3 peripheral nerve mechanism that it does. It
4 does have a low pH, which means it's slightly
5 acidic compared to blood, so it may have an
6 effect on veins like that, but I really don't
7 know the specific mechanism.

8 With Valium, it is because there's a
9 direct caustic effect on the veins as well as
10 the pH, but I'm not familiar with the specific
11 work in midazolam for that.

12 Q. Do you use midazolam in your medical
13 practice?

14 A. I do, yes.

15 Q. For what procedures do you use midazolam?

16 A. Well, I use it as an adjunct in many
17 different kinds of procedures. Are you asking
18 me -- but I never -- I never use midazolam
19 alone in any of the procedures that I'm working
20 on.

21 Q. So what procedures do you use midazolam
22 as an adjunct for?

23 A. It could be used for almost any
24 procedure, except perhaps ones in which we are
25 wanting to have a patient recall a procedure.

1 So it's possible that in certain neuro
2 procedures where we need to have memory and
3 recall as part of the testing of neuro function
4 afterwards, that we would avoid midazolam.

5 We also would avoid midazolam in patients
6 who have a tendency towards postop delirium or
7 dementia, postoperative cognitive dysfunction
8 because it can have -- it can both precipitate
9 that and it can also inhibit our ability to
10 assess the patient. But I could use midazolam
11 potentially in -- as part of my -- as part of
12 my management of patients in almost any
13 procedure.

14 Q. So does midazolam affect recall?

15 A. It has a very powerful effect on recall,
16 yes.

17 Q. What is that effect?

18 A. It causes amnesia.

19 Q. At what dosage?

20 A. It can cause amnesia at very small doses,
21 1 to 2 milligrams.

22 Q. What do you use midazolam with? Like --
23 let me rephrase my question.

24 When you administer midazolam, what other
25 drugs are you administering with it?

1 A. Well, for -- if we are not talking about
2 a painful procedure, if we're just talking
3 about a patient who's anxious, for example,
4 undergoing an X-ray, like going in an MRI
5 scanner, I might just give them midazolam
6 alone.

7 When I said previously that I wouldn't
8 use it as a solo drug, I meant for
9 significant -- for painful procedures. And so,
10 almost always with procedures that are going to
11 cause discomfort and pain rather than simply
12 anxiety, I would almost always combine it with
13 a very potent narcotic. And I will also
14 additionally likely combine it with other drugs
15 that include some anticholinergics and/or
16 droperidol, butorphanol, things like that to
17 prevent nausea. So -- but it totally depends,
18 and for surgeries that involve significantly
19 painful procedures, there might be six to ten
20 other drugs that I give.

21 Q. What would be examples of surgeries with
22 significantly painful procedures?

23 A. Let's say intracavitary procedures are
24 significantly painful for -- so for surgeries
25 inside the belly, inside the pelvis, inside the

1 chest, for example -- are good examples of
2 significantly painful procedures.

3 Q. And so, the only times you've
4 administered midazolam by itself is to address
5 a patient's anxiety?

6 A. Pretty much. I mean, I won't swear that
7 I haven't given it -- I can -- for example, I
8 could foresee giving midazolam if I had no
9 other drugs available or if I had a patient
10 such that they would not tolerate any other
11 drugs. For example, they were dying from
12 injuries in a motor vehicle accident or
13 something like that.

14 There might be brief periods in which I
15 would use midazolam alone because they
16 wouldn't -- it wouldn't be as likely to cause a
17 fatal change in blood pressure or, you know,
18 that. But essentially, no, I don't use that
19 drug alone except in nonpainful procedures.

20 Q. And if you -- in those limited situations
21 where you would use midazolam alone, would you
22 be using it to reduce pain?

23 A. Absolutely not. A patient would have no
24 pain relief whatsoever. What I would be doing
25 is trying to make them forget that they had

1 pain.

2 Q. Okay. Subsequently be unable to recall
3 that they were in pain?

4 A. Yep.

5 Q. Okay. If you were to use midazolam by
6 itself for that purpose, how much midazolam
7 would you administer?

8 A. Again, it depends on the status of the
9 patient. If I have a very compromised patient,
10 I might just use as little as 1 milligram. But
11 I can pretty reliably produce amnesia if I give
12 2 milligrams.

13 Q. Are there any other purposes that
14 anesthesiologists use midazolam for?

15 A. Any other purposes. Well, there have
16 been a lot of --

17 MR. KURSMAN: I'll object to form.

18 BY MR. MITCHELL:

19 Q. Do you know whether there are other
20 purposes anesthesiologists have used midazolam
21 for?

22 A. There are some research studies in which
23 trials of midazolam for other purposes have
24 been used. Most of those clinical studies are
25 pretty problematic. I don't know of any common

1 clinical use for painful procedures that
2 midazolam would be used for other than as
3 adjunct.

4 Q. What's the intended effect or effects of
5 midazolam?

6 A. The intended effect is to provide the
7 patient with relief of anxiety, relaxation,
8 sedation and amnesia.

9 Q. Are there any other intended effects of
10 midazolam?

11 A. None that I'm thinking of at this moment,
12 but if they occur to me, I'll let you know.

13 Q. Okay. Does midazolam also sometimes
14 produce unintended effects?

15 A. Sure.

16 Q. What are some examples of unintended
17 effects midazolam can produce?

18 A. Well, when -- if we define "unintended
19 effects" not meaning unexpected, just
20 unintended, it's not --

21 Q. Sure.

22 A. -- why we give the drug.

23 Q. Yes.

24 A. Midazolam can lower blood pressure. It
25 can -- if it's -- are we -- and if we're -- let

1 me back up and say, if we're talking about
2 intravenously injected midazolam?

3 Q. Yes.

4 A. Yes. Then it can have effects on blood
5 pressure. It can also have effects on
6 breathing, although it doesn't -- the
7 benzodiazepines generally don't cause
8 respiratory arrest by themselves. They can
9 cause a change in how responsive the brain is
10 to the buildup of carbon dioxide and to the
11 fallen oxygen level.

12 So a patient -- let me translate that. A
13 patient's breathing may become more shallow
14 with midazolam.

15 Q. Shallow enough that you would use a
16 ventilator?

17 A. Not generally, no. It's actually pretty
18 hard to stop some -- with just using midazolam
19 alone, which is what we're talking about, it's
20 actually hard to stop someone's breathing.

21 Q. But is it possible?

22 A. It might be, if the patient had the right
23 medical conditions. I don't -- I mean, I --
24 you know, any -- anything's possible, but that
25 doesn't mean it happens, you know.

1 Q. What if the dose was extremely high,
2 could that stop a patient's breathing?

3 A. Well, define "extremely high."

4 Q. Hundred milligrams of midazolam delivered
5 intravenously, could that stop a patient's
6 breathing?

7 A. Well, first of all, there are no clinical
8 studies that study that. So we're looking at
9 doses that are lower than that and that are
10 below the ceiling effect of midazolam anyway.

11 But in what are considered relatively
12 high clinical doses, which would be 40 to
13 50 milligrams, patients continue to breathe.
14 And if they don't have -- if they haven't taken
15 any other medications and we don't give them
16 any other medications, it would be unlikely to
17 stop their breathing.

18 Accord -- and this is according to
19 studies done with benzodiazepines when they
20 were created.

21 Q. So is it your testimony that midazolam
22 could not stop a patient's breathing by itself?

23 A. I think what I just said is, given the
24 right circumstances it might, but that in
25 clinical doses it's unlikely to.

1 Q. What are other unintended effects of
2 midazolam?

3 A. I think I mentioned that you can
4 sometimes get a fall in blood pressure when you
5 inject it, and that -- benzodiazepines cause --
6 that can be due to relief of anxiety if the
7 blood pressure's been raised by anxiety, but
8 it -- but the benzodiazepines also have a
9 direct effect on dilating blood vessels, which
10 can cause a fall in blood pressure, and that
11 can lead reflexively to a rise in heart rate.

12 Q. Does midazolam have any other unintended
13 effects that you're aware of that we didn't
14 discuss?

15 A. Well, I mentioned the unintended effects
16 of contributing potentially to postop delirium
17 of postoperative cognitive dysfunction.

18 It can cause prolonged sedation, meaning
19 it can have unintended duration of effects. We
20 expect the patient to have clinical effects for
21 an hour, and they have clinical effects for two
22 or three.

23 I'm not thinking of any other effects at
24 the moment, but there probably are some others
25 I've just not named.

1 Q. What are some of Midazolam's unexpected
2 effects?

3 A. Well, an example of an unexpected effect
4 would apply to any drug. You can get -- just
5 like with any drug, you can get an allergic
6 reaction to it. So you can have allergy and
7 anaphylaxis. You can also have paradoxical
8 reactions to any of the benzodiazepines, in
9 which we're expecting the patient to have some
10 relaxation and sedation and instead they get
11 agitated, terrified and start to become
12 combative because of the drug.

13 There are also disinhibitory effects in
14 the brain, meaning that it's a little like
15 being drunk. You would say or do things that
16 you might not normally do, or become
17 uncharacteristically, well, combative as a
18 result of it. So those are among the most
19 common unexpected effects of midazolam.

20 Q. And other benzodiazepines, too?

21 A. Yes. That's a general characteristic of
22 the benzodiazepines.

23 Q. Can Midazolam's effects vary from person
24 to person?

25 A. They do, yes.

1 Q. Okay. In any ways we haven't talked
2 about?

3 A. None that I can think of.

4 I did just realize one kind of silly side
5 effect of midazolam, and it occurs in about
6 25 percent of people, and that is it gives them
7 the hiccups.

8 Q. I'm sorry, say that --

9 A. It can give them the hiccups.

10 Q. Before you administer midazolam, what do
11 you consider -- what characteristics of a
12 patient do you consider?

13 A. Well, the one -- some of the ones I
14 mentioned. For example, the first thing I
15 consider is whether the midazolam is needed.

16 The second is whether they are in a
17 generally frail condition such that my drug is
18 likely to affect their blood pressure, pulse.

19 Another is whether or not they may be at
20 risk for prolonged side effects from midazolam,
21 such as people who have mild dementia,
22 borderline dementia and shouldn't receive it.

23 And then finally, whether they've had a
24 prior bad reaction to midazolam. If there's a
25 known bad reaction, be it allergic, be it

1 combativeness or any core paradoxical reaction.

2 Q. Is there anything else you take into
3 account before administering midazolam?

4 A. Probably, but that's what I'm remembering
5 right now. I mean, I'd have to be given a
6 specific patient to tell -- for you to say what
7 all are you going to think of on this
8 particular patient. But yeah, those are the
9 basic ones.

10 Q. Okay. Can midazolam inhibit movement?

11 A. I'm not sure what you mean by "inhibit
12 movement."

13 Q. Can midazolam impede the ability of
14 someone to move their lips, for example?

15 A. Well, potentially. I mean, there --
16 the -- there is no direct effect of midazolam
17 on the muscles. That's what I was really
18 asking, if that's what you meant. And it
19 doesn't tell the nerves not to tell the muscles
20 to move.

21 There are central effects of midazolam at
22 the GABAergic receptors that -- and midazolam
23 does act in central areas of the brain that
24 tell the brain to move in response to stimulus
25 and that tell it what kind of movement to make.

1 And because midazolam is a GABAergic drug, it
2 can affect those sites. And so, a patient
3 might -- there's not a physical inhibition of
4 movement. There's nothing telling the muscles
5 not to move, but midazolam can create a
6 situation in which the patient doesn't move,
7 even though you think they should.

8 Q. How does midazolam create that situation?

9 A. Well, if -- I'm going to refer you to my
10 report, but I'll give you a basic summary. As
11 I just said, GABAergic drugs, many of them can
12 have this effect, they do affect areas in the
13 thalamus, amygdala and other areas, which are
14 the signal-switching centers of the brain.

15 So the brain gets a signal, I'm in pain,
16 I'm terrified, and the -- it gets a multitude
17 of signals often at once in stressful
18 situations, and areas of the brain that I just
19 mentioned are responsible for selecting which
20 of those signals go forward and how they go
21 forward, what they signal the brain to do about
22 the stimulus.

23 And so, the switching station actually is
24 affected by GABAergic drugs and can prevent the
25 brain from selecting an action out of those,

1 myriad of actions it could do. It could tell
2 the body to move. It could tell the body to
3 move in a certain way, to move an arm, to push
4 away what's causing a stimulus or whatever, or
5 to just generally move. But GABAergic drugs
6 affect centers of the brain that tell the brain
7 actually which move to select.

8 And so, there are patients who have been
9 shown under high dose midazolam anesthetics to
10 be awake but not move, even though they later
11 say they were in pain, for example.

12 Q. So midazolam can inhibit movement?

13 A. Yeah, the -- there are -- the studies
14 indicate that it can, yes, but I caught what
15 you were asking, that you were asking about
16 does it stop muscles from working, and the
17 answer is generally no. No, it doesn't.

18 Q. It's through the operation of the brain
19 that it inhibits movement?

20 A. It's through switching in the brain that
21 it prevents movement in answer to a stimulus.

22 Q. And did I understand you correctly,
23 midazolam can also cause movement? Or did I
24 misunderstand you?

25 A. I don't think I said that.

1 Q. Okay. Okay, that's user error.

2 A. I can't think of it doing that, so I
3 don't think I said that.

4 Q. Understood.

5 When was the last time you administered
6 midazolam for a patient, Dr. Van Norman?

7 A. It was the -- when I was doing OR
8 anesthesia. As I mentioned, I stopped just a
9 few months ago because of the pandemic.

10 Q. And you stopped because of COVID, as
11 discussed, and --

12 A. Exactly.

13 Q. -- other -- yep.

14 A. Yep.

15 Q. Okay. How much midazolam did you
16 administer to a patient the last time you gave
17 a patient midazolam?

18 A. It was probably 1 or 2 milligrams. I
19 can't give you a specific dose, but it's so
20 rare for me to give more than that these days.

21 (WHEREUPON, technical difficulties
22 were had.)

23 BY MR. MITCHELL:

24 Q. And so, Dr. Van Norman, what is the
25 maximum -- maximum dose of midazolam you've

1 ever administered to a patient?

2 A. It's been several decades since it was
3 used in cardiac anesthesia, so I can't give you
4 the specific dose, but it would have been --
5 that I used, but it would have been between 1
6 and 1 and a half milligrams per kilogram.

7 Q. Which is how many milligrams?

8 A. Well, for a hundred kilogram person, it
9 would be a hundred milligrams.

10 Q. So you've administered a hundred
11 milligrams of midazolam to a person?

12 A. On a couple of occasions, probably. I
13 haven't -- what I -- the benzodiazepine that we
14 were using at that time was Valium, and
15 midazolam had just come on the market. So
16 there were a couple -- there were a few cases,
17 a handful of cases in which we used midazolam,
18 and we would have used them in that dose -- in
19 that dose.

20 Q. Would you have ever given a higher dose
21 than a hundred milligrams?

22 A. I -- you mean have I or would I?

23 Q. Have you, have you, have you ever given a
24 higher dose than a hundred?

25 A. Possibly, but not that I specifically

1 recall.

2 Q. Over what time period would that hundred
3 milligrams have been administered?

4 A. Over -- probably -- we give it -- we
5 would give all of the benzodiazepines because
6 they have that effect on blood pressure, we
7 would give it not as an IV push, like not over
8 one or two seconds. We would probably give it
9 over a total of about two minutes, two to
10 three minutes.

11 Q. And why wouldn't you give it in just a
12 couple seconds?

13 A. Because of its effect on blood pressure.
14 It -- benzodiazepines all have a vasodilatory
15 effect and can lower blood pressure. And since
16 we were using these in cardiac patients, these
17 would be patients that we'd be particularly
18 susceptible to harm if their blood pressure
19 fell. So we gave all of our drugs in the
20 cardiac room more slowly than we would give
21 them in regular anesthesia practice.

22 Q. And now, in your current practice, what
23 is the standard dose of midazolam that you
24 would use?

25 A. That I would use or that I have used?

1 Q. That you -- let's say 2019, let's use
2 2019 as a benchmark. What was the standard
3 dose of midazolam for Dr. Van Norman to use in
4 2019?

5 A. Again, it would be 1 to 2 milligrams, but
6 a standard variation would be up to 0.1
7 milligram per kilogram. So in an average-size
8 guy, that would be 7 to 10 milligrams. Usually
9 not given as -- at once, through, given over a
10 few minutes.

11 Q. A few minutes?

12 A. Yeah.

13 Q. Like five to ten minutes?

14 A. Possibly, yeah.

15 Q. All right. And would this be considered
16 a typical dose for other anesthesiologists, as
17 well?

18 A. I think so, yes.

19 Q. What do you consider a high dose of
20 midazolam?

21 A. I would say if you're giving midazolam
22 greater than 0.1 milligram per kilogram, you're
23 getting into higher doses.

24 Q. Which how many milligrams is that in an
25 average-sized adult?

1 A. Well, in a 100-kilogram person, it would
2 be ten milligrams.

3 Q. And hundred kilograms is how many pounds?

4 A. It's 220 pounds. You're asking me to do
5 math now in my head.

6 Q. And what would a small dose of midazolam
7 be?

8 A. Half a milligram, a quarter of a
9 milligram we sometimes would give in really
10 frail or elderly patients.

11 Q. In what circumstances would you give half
12 a milligram to a person?

13 A. Only when I'm trying to provide
14 anxiolysis, meaning relief of anxiety. I might
15 start with that dose in a frail person.

16 Q. In a healthy-sized adult, what would you
17 expect -- what is the effect of 1 milligram of
18 midazolam?

19 A. I would expect in most healthy adults
20 that they would get some anxiolysis from it,
21 that they might -- they may or may not have
22 sedation. In fact, probably not. They would
23 probably subjectively report to me that they
24 could, quote, feel it, end quote.

25 Q. What about 5 milligrams in a healthy

1 adult, what would you expect the effect would
2 be?

3 A. With the caveat that we're talking about
4 giving this drug without any stimulation, is
5 that what you mean?

6 Q. Yes.

7 A. Yeah. In a healthy adult, again, it will
8 depend on the size, the sex and the frailty of
9 the adult. I would expect nearly everybody to
10 tell me they don't feel anxious anymore, but
11 some might still feel anxious. I would expect
12 nearly everyone to say that they can feel some
13 effect from the drug. And I would expect some
14 people to feel like they were relaxed enough to
15 fall asleep.

16 Q. What about 10 milligrams of midazolam,
17 what would you expect in a healthy adult?

18 A. I would expect in an unstimulated,
19 healthy adult of average size that almost
20 everyone would feel -- that everyone would feel
21 anxiolysis from that, that they would all have
22 subjective feelings that they had received the
23 drug, and that they -- and some of them
24 would -- if they were -- would be relaxed
25 enough in an unstimulated environment to doze

1 off.

2 I should go back and say, in addition, at
3 each one of these doses coming forward, I would
4 expect the vast majority of people to be
5 amnestic from the moment I gave them the drug
6 forward.

7 Q. Can you say that last sentence one more
8 time?

9 A. In all of these doses, even the small
10 ones, I would expect the vast majority of
11 patients, stimulated or not, to be amnestic for
12 everything after they're given the drug until
13 it wears off.

14 Q. Okay. One more: What would you expect
15 in a healthy-sized adult intravenously given
16 20 milligrams of midazolam?

17 MR. KURSMAN: And, Rob, can I just
18 clarify the question? Are you asking in the
19 absence of a noxious stimuli?

20 MR. MITCHELL: Yeah, I thought that's
21 what Dr. Van Norman was testifying when she
22 said unstimulated.

23 MR. KURSMAN: Okay, thanks.

24 THE WITNESS: Oh, yeah. In an
25 unstimulated adult at 20 milligrams, I would

1 expect everyone to be amnestic for not just the
2 vast majority, but everyone would be. I would
3 expect that everyone would be really relaxed,
4 and many of them would be falling asleep if
5 they weren't stimulated.

6 I would still expect most of them,
7 however, to wake up quite stimulated and
8 particularly with a painful stimulus. I --
9 if -- when the patient spoke to me, I would
10 expect them all to tell me that they felt
11 significant drug effects.

12 BY MR. MITCHELL:

13 Q. Would you expect these people to be
14 non-responsive to you saying their name?

15 A. Depends on how I said their name.

16 Q. Let's say you --

17 A. If I whispered it to them, perhaps. I
18 would expect the vast majority to still be
19 responding to their name if called loudly
20 enough and more than once, yes.

21 Q. What if only called once?

22 A. Some of the clinical studies show that if
23 you say their name in a normal volume voice
24 only once, that some patients don't respond,
25 but then if you raise your voice and say it

1 again, they will respond. So you tell me which
2 situation you mean.

3 Q. What clinical studies are those?

4 A. I've cited them in my report, and also
5 most of the clinical studies that your expert,
6 Dr. Antognini, cites say the same thing.

7 Q. What does it mean to give someone a
8 therapeutic dose of something?

9 A. It means that the effects that we are
10 expecting from the drug have been achieved in
11 that person. So a therapeutic dose, you might
12 say -- you know, a drug package insert says a
13 therapeutic dose is -- let's -- I'm not talking
14 about midazolam now. I'm just talking about
15 generic drug that's like, say, 2 to
16 3 milligrams. What that means to me is that
17 when you give 2 to 3 milligrams, you're going
18 to see the expected result of what the drug was
19 designed to do, in most patients.

20 Q. So what is --

21 A. Let me just continue for one second.

22 Q. Yeah.

23 A. But there's also the question of, what is
24 the therapeutic dose in this patient. So there
25 can be individual patients in which I would

1 say, no, I didn't get that effect until I got
2 to this dose or I got it much sooner; in which
3 case, their individual therapeutic dose is
4 different than, say, the standard that the
5 package insert would say.

6 Q. So for a healthy adult, what's the
7 therapeutic dose for midazolam?

8 A. It depends on what outcome you're looking
9 for, because you have to -- when you're saying
10 therapeutic dose, you have to say, what
11 specific effect were you trying to achieve?

12 Q. So let's assume you were trying to
13 achieve complete amnesia.

14 A. Well, studies demonstrate that for all --
15 virtually everybody, 1 to 2 milligrams of
16 midazolam will achieve amnesia for an
17 unstimulated environment.

18 It also depends -- I should back up and
19 say amnesia and awareness are going to be
20 related to the level of stimulus that the
21 patient is getting, because consciousness and
22 awareness are not an all-or-none phenomenon.
23 So if I take --

24 Q. You said consciousness and awareness are
25 not what? I'm sorry to interrupt.

1 A. An all-or-none phenomenon.

2 And so, if, for example, I take a patient
3 in the preop holding area and they're just
4 anxious but I'm not doing anything painful to
5 them, I'm not stimulating them with anything
6 that would cause them more distress, then the
7 vast majority of patients will be amnestic with
8 1 to 2 milligrams of everything going forward.

9 Q. And what if they were stimulated?

10 A. Still the vast majority will be amnestic,
11 but the number might be somewhat less. But the
12 studies show that -- you -- you can -- let me
13 put it this way: You can give a very strong,
14 severely painful stimulus to somebody who has
15 been given an amnestic drug and know -- and
16 they can be aware of it and report it if they
17 remember it later, but the problem with
18 midazolam is they won't usually remember it
19 later. So you -- if you're going to determine
20 whether they're aware of it at the time, you
21 have to actually test them at the moment that
22 you're giving it.

23 Q. What is the maximum clinically studied
24 dose of midazolam that you're aware of?

25 A. Since I can't cite a specific study, I

1 would say that we gave those cardiac doses
2 based on studies, so that would probably be the
3 highest. It certainly is not 500 milligrams of
4 midazolam.

5 Q. 200 milligrams of midazolam?

6 A. No, I think that -- I think there are
7 some studies that we were working off of back
8 then that were around a hundred to
9 150 milligrams, but these were only -- these
10 were not pharmacokinetic or pharmacologic
11 studies. These would be given to patients in a
12 heart situation.

13 Q. Did you cite to these studies in your
14 expert report in this litigation?

15 A. I didn't, because they weren't rigorously
16 studied for any of the factors that we were
17 looking at.

18 Q. When was the last time you gave someone
19 at least 20 milligrams of midazolam?

20 A. I can't remember. It would have probably
21 been 20 years ago.

22 Q. Okay. And over what time period would
23 you have administered that?

24 A. You mean how fast would I give the drug?

25 Q. How fast? Yes, I'm sorry.

1 A. It's very likely that that would have
2 been over minutes or even, you know, a half an
3 hour or so. The effects of midazolam are
4 cumulative, so you would still see the full
5 effect of the 20 milligrams, but it wouldn't
6 have been something given IV push.

7 Q. What sort of procedure would you have
8 given 20 milligrams of midazolam for?

9 A. Well, if I gave 20 -- and again, you're
10 asking me to remember something a long time
11 ago -- it would have been for -- as an adjunct
12 to a general anesthetic I was giving, or in the
13 course of a prolonged procedure requiring
14 monitored anesthesia care where the patient was
15 going to be awake during the procedure but for
16 many hours during the surgical procedure.

17 Q. What would be an example of that kind of
18 surgery?

19 A. I can give you an example of the surgery,
20 but I can't guarantee you that I actually gave
21 it in this circumstance.

22 If I had a patient, for example, that was
23 having an extensive head and neck surgery in
24 which there was a lot of neuro monitoring going
25 on, we didn't want to ping the facial nerve or

1 whatever in that, nowadays we would study that
2 differently than we did 20 years ago in the
3 operating room, but we might have well wanted
4 verbal contact with the patient during that
5 time.

6 Q. And would you ever have administered --
7 have you ever administered 50 milligrams of
8 midazolam or more for a procedure that wasn't
9 cardiac anesthesia?

10 A. 50, 5-0.

11 Q. Not -- 55, just 55?

12 A. I mean 5-0, not 1-5. I couldn't tell.

13 Q. Oh, yeah, yeah, 5-0, I'm sorry. Not
14 5-5-0.

15 A. No, uh-uh.

16 Q. So to rephrase, you have not administered
17 50 milligrams or more of midazolam for a
18 noncardiac anesthesia procedure?

19 A. No, not that I can recall.

20 Q. Do you advise patients who've received
21 midazolam not to drive home from the hospital?

22 A. I do.

23 Q. And why do you do that?

24 A. There are studies that show that fine
25 motor -- I'm sorry, not fine motor, that motor

1 reaction times are slowed by midazolam for up
2 to 24 hours after surgery. And there have been
3 reported cases of patients who were involved in
4 car accidents because -- and it was presumed it
5 was because they did not have the fine motor
6 control to hit the brakes in time.

7 And so, we tell people -- we know that
8 the drug is out of their system in the
9 24 hours, and we know of no -- I know of no
10 studies that have shown accidents related to
11 the drug after that period of time.

12 Q. Is midazolam administered when a doctor
13 is setting or resetting a bone?

14 A. It might be, yes.

15 Q. Do you know whether it is?

16 A. I don't have a personal experience of
17 that, but it would be a reasonable drug to
18 reach to as part of what's given when somebody
19 is setting a bone.

20 Q. And would midazolam be a reasonable drug
21 to administer when someone was replacing a
22 dislocated joint?

23 A. Yes, but in neither of the cases you've
24 cited would we expect the patient have any pain
25 relief. We would be giving it for anxiety,

1 relaxation and to make them forget what's about
2 to happen.

3 Q. And would midazolam be a reasonable drug
4 to administer when a doctor was performing a
5 cesarean section?

6 A. Yeah, for the same reason. I would
7 not -- we would not expect that to cause any
8 pain relief whatsoever.

9 MR. KURSMAN: Rob, just to clarify
10 again, are you asking as a solo drug or are you
11 asking in conjunction with other drugs or both?

12 MR. MITCHELL: Well, in conjunction
13 with other drugs.

14 MR. KURSMAN: Okay.

15 THE WITNESS: Yeah, and let me
16 clarify that I meant in each of those cases in
17 conjunction with other drugs.

18 BY MR. MITCHELL:

19 Q. And would it be your position, Dr. Van
20 Norman, that it would be unreasonable to use as
21 a solo drug in those three aforementioned
22 circumstances?

23 A. Not -- it would depend on the
24 circumstances under which they were being
25 carried out to determine whether it's

1 reasonable or not. So I can't -- I'd have to
2 know the specific circumstances and patient to
3 tell you that. There are certainly -- I think
4 in most cases, it would be unreasonable to use
5 it as a solo drug.

6 Q. Can you craft a situation in which it
7 would be reasonable to use midazolam as a solo
8 drug for resetting a bone?

9 A. Well, I mean, if -- no, I -- you're
10 asking an anesthesiologist, and we hate pain.
11 And some of our ER colleagues are more willing
12 to put their patients through pain than we are.

13 No, I don't think it's reasonable in
14 anything but extreme circumstances to use
15 midazolam for a significantly painful procedure
16 without accompanying it with other drugs,
17 because midazolam will not cause any relief of
18 pain. I would be using it solely to make a
19 patient forget. And it is -- to put a patient
20 through a torturous experience and then just
21 give them something to make them forget is not
22 considered good anesthesia practice.

23 Q. What is a ceiling effect of a drug,
24 Dr. Van Norman?

25 A. Well, it depends on whether you're

1 talking -- well, the ceiling effect that we
2 typically talk about is clinical ceiling effect
3 where you -- you give a drug in increasing
4 doses and at some point you hit a level, and
5 you don't with all drugs, but with most drugs
6 you hit a level at which giving more of the
7 drug doesn't result in more clinical effects.
8 So you've reached the maximum clinical effect
9 and you're not going to get any more by giving
10 more of the drug.

11 Q. So under that definition, do you know
12 what Midazolam's ceiling effect is?

13 A. Well, the clinical studies in human
14 beings that have found a ceiling effect
15 generally demonstrated at between 0.2 and 0.3
16 milligrams per kilogram.

17 There are --

18 Q. Which is how many --

19 A. I'm sorry.

20 Q. Which is how many milligrams?

21 A. For a 100-kilogram human being, it would
22 be 20 to 30 milligrams.

23 Q. Okay. And so, Midazolam's ceiling effect
24 in an average human being is around 20 to
25 30 milligrams?

1 A. That's what the -- when there's been
2 ceiling effects seen with midazolam in human
3 subjects, that's where that appears to happen.
4 There has been no clinical study that
5 identifies between those two doses the exact
6 dose.

7 Q. So let's say someone received
8 30 milligrams of midazolam, someone who's a
9 hundred kilograms received 30 milligrams of
10 midazolam and then 30 minutes later received
11 another 30 milligrams of midazolam, what would
12 you expect to happen?

13 A. Why am I giving them that? I need to
14 know what the stimulus is.

15 Q. Let's say you're not giving it, you just
16 walk into the operating room and someone chose
17 to do that.

18 A. If they are in the operating room, are
19 they being stimulated or not? I'm sorry, I'm
20 trying to get specific here.

21 If they are not being stimulated, I would
22 expect the effects we already talked about. I
23 would expect every one of those patients to be
24 probably dozing, if they're unstimulated, but
25 responsive, certainly responsive to pain.

1 I would expect amnesia for whatever
2 happens to them at that point. In fact, it
3 would be a surprise if they could recall any of
4 it. And I would expect probably a modest
5 decrease in blood pressure with the
6 administration of those drugs -- of that drug.

7 Q. What if the person was stimulated, what
8 would you expect?

9 A. Are they paralyzed or unparalyzed?

10 Q. Unparalyzed.

11 A. I would expect that with a severe
12 stimulus, they would respond -- that most of
13 them would respond with movement.

14 However, there are studies using the
15 isolated forearm technique that show that some
16 patients can -- who report experiences in the
17 operating room later because they have recall
18 did not voluntarily move.

19 So I would expect the majority to move,
20 but there would be some patients who would
21 still be aware who would not move. And I would
22 still expect, if it were a very significantly
23 painful event, the patient would be aware at
24 the time of the stimulus.

25 Q. And would the extra -- the second dose of

1 30 milligrams of midazolam, would that extend
2 the duration of the midazolam would affect the
3 patient?

4 A. Yes, but that's not -- possibly, but
5 that's not a ceiling effect. The ceiling
6 effect is not about duration, it's about the
7 maximum effect. So it would not affect the
8 maximum effect of the drug, but it might
9 prolong how long the drug was acting.

10 Q. Dr. Van Norman, can midazolam cause apnea
11 in someone?

12 A. It generally doesn't, no, unless it's
13 accompanied by other drugs or unless the
14 patients are on an adjunct drug.

15 Q. Generally doesn't, but can it?

16 A. I -- to be honest, the studies don't seem
17 to indicate -- it's -- they indicate that that
18 would be a very rare event, but I suppose it's
19 possible.

20 Q. Switching gears, we talked a little bit
21 about vecuronium bromide. What is vecuronium
22 bromide?

23 A. It's a paralytic -- it's a drug that
24 paralyzes the muscles by acting at the --
25 what's called the neuromuscular junction, where

1 the nerves give signals to the muscles.

2 Q. And does vecuronium bromide affect the
3 patient's ability to breathe?

4 A. It will stop the patient's ability to
5 breathe.

6 Q. How quickly?

7 A. It depends on the size of the dose, how
8 rapidly it's given, and the patient -- and
9 patient individual factors, as well, but we've
10 talked about that earlier in the deposition.

11 Q. Yeah, it can -- depending on the dosage,
12 it can happen in 60 seconds or less; is that
13 correct?

14 A. Potentially, yes.

15 Q. And are there studies that support that?

16 A. I am aware of the clinical study that
17 looked at the -- looked at the rapidity of
18 onset of vecuronium compared to the dosing
19 level and found a more or less linear
20 relationship, although they didn't -- I don't
21 have the -- a ceiling effect on it. And they
22 found that with a clinically -- sort of the
23 clinically range of dosing given rapidly, you
24 could get paralysis in 82 seconds.

25 So in supramaximal doses, I think I

1 mentioned this earlier in the deposition, it is
2 very likely that you'd be under 60 seconds for
3 that effect to occur.

4 Q. Do you use vecuronium bromide in your
5 medical practice, Dr. Van Norman?

6 A. When I was in the operating room, yes. I
7 mean, I'm just -- you say "do," and I just
8 wanted to make sure we bear in mind that I'm --

9 Q. Yeah, yeah, yeah. If you -- any time you
10 want to say the pre-COVID caveat, please speak
11 up.

12 A. Yeah. The COVID caveat, but yes.

13 Q. Okay. For what procedures would you use
14 vecuronium bromide in your medical practice?

15 A. It's a wide variety of procedures, any
16 time that I need muscle paralysis.

17 Now, I may need muscle paralysis, for
18 example, for just intubating a patient to
19 relax -- to relax the muscles of the neck and
20 pharynx that I can get the breathing tube in,
21 and then not use it during the stimulus --
22 during the stimulating part of the surgery.

23 Most intracavitary procedures, and I'm
24 going to just repeat what I mean by that, the
25 chest, the abdomen, the pelvis, the surgeon has

1 to work through muscles to get there, and those
2 muscles tighten up and can make it harder for
3 them to get a good field of view, and so they
4 generally want patients to be paralyzed during
5 those procedures so that they can get a
6 widespread of the muscles.

7 So virtually all of them where the
8 patient's going to be open rather than
9 laparoscopically or through a scope, we're
10 going to use muscle paralysis. We will use
11 muscle paralysis with laparoscopy for a
12 different reason that allows us to insufflate
13 gas into the belly sufficient to give the
14 surgeon the clinical view.

15 If there are times when I need the airway
16 paralyzed for an ENT doctor, I'm going to use a
17 muscle paralytic agent. If there are times
18 when we need the muscles relaxed that are not
19 intracavitary and we're doing a total joint and
20 we need to relax the muscles, we may well use a
21 paralytic for that, although we could achieve
22 the same thing by doing a regional anesthetic
23 instead.

24 That's not an all-inclusive list, but
25 that should give you an idea of the kinds of

1 things where we would use it.

2 Q. So when you administer vecuronium
3 bromide, how much vecuronium bromide are you
4 typically administering?

5 A. I'd be giving between 0.1 and
6 0.15 milligrams per kilogram.

7 Q. Which is how many milligrams --

8 A. Up to --

9 Q. -- in a healthy adult?

10 A. Up to 10 milligrams, let's say, in a
11 healthy adult. And I'm going to titrate that,
12 though. I may give less in a smaller adult and
13 I'm going to titrate the effect because I'm
14 going to have a twitch monitor on the patient
15 that tells me whether the muscles are, indeed,
16 paralyzed. So I'm going to --

17 Q. What does it mean -- I'm sorry.

18 A. I'm sorry, go ahead.

19 Q. What does it mean to titrate the drug?

20 A. It means that I'm going to use a monitor,
21 whether it's a -- the general term means I'm
22 going to use a monitor, whether it's my own
23 physical, you know, eyes, ears, whatever, or
24 it's a mechanical or an electronic monitor to
25 guide how much drug I give and whether I add

1 more drug and when.

2 So titration is to not just give a slug
3 of drug. It's to give it, give it, give it as
4 you see the effects coming on until you -- just
5 until you get the effect you want and not
6 beyond.

7 Q. And do you always titrate vecuronium
8 bromide?

9 A. I -- no -- the answer is no. There may
10 be times in which I have to give the drug
11 for -- to get a -- get what I think will be a
12 maximal effect rapidly because either emergency
13 situations or control an airway; in which case,
14 I'm going to give a standardized dose per
15 kilogram. I'm not going to give less than that
16 and work my way up.

17 Q. And do you frequently administer
18 vecuronium bromide intravenously?

19 A. It's the only way I've administered
20 vecuronium.

21 Q. How does vecuronium bromide affect a
22 person's ability to breathe?

23 A. It -- a person can't breathe when they're
24 paralyzed, not on their own.

25 Q. And so, if you're preparing to administer

1 vecuronium bromide to a patient, what -- run me
2 through the checklist of things you're
3 considering.

4 A. I'm sorry, I'm kind of stunned by the
5 scope of the question.

6 You mean, I already know I need the
7 vecuronium. I'm not assessing whether I need
8 it. I'm going to --

9 Q. Right, you made the decision to use it.

10 A. Okay. So if I made the decision to use
11 it, first of all, I need to have a well-running
12 IV. I can't give it -- I shouldn't give it
13 into an IV that is not free-flowing.

14 I need to have available suction so that
15 if the patient vomits and -- I can quickly
16 suction that away from the airway and hopefully
17 save them from drowning in their own vomit.

18 And by the way, frequently, if I'm going
19 to be giving vecuronium in an emergency
20 situation, that's the situation in which I will
21 be giving it. I want to have a means of
22 intubating them and controlling the airway or
23 putting in what's called an LMA in, which is
24 another way of controlling the airway, a
25 laryngeal mask airway.

1 I want to make sure that that equipment
2 is working and in good order, so I'm going to
3 have checked that out ahead of time. I want to
4 make sure that I have a video -- either a
5 laryngoscope or a videoscope of some kind that
6 will help -- that will facilitate me putting
7 the airway in quickly.

8 I'm going to want to have some sort of
9 means of ventilating the patient once I have
10 the airway in, whether it's a ventilator, an
11 Ambu bag.

12 I'm going to want to warn the patient
13 that they may feel weak. It is rare for me to
14 give vecuronium without giving some narcotic in
15 addition to it, because I want the airway
16 reflexes suppressed, but if there were an
17 extreme situation, I can imagine giving someone
18 a paralytic agent in order to intubate them, in
19 order to save their life; in which case, I
20 would warn them that they were going to feel
21 weak and I would assure them that I'm going to
22 make sure they get enough air.

23 I'm going to want to also, if possible,
24 if it's in -- if it's not in the field
25 somewhere, I'm going to want to have monitors

1 that work, that show me the blood oxygen
2 saturation, the blood pressure and the pulse
3 heart rate and rhythm.

4 Q. So -- okay. So then, let's take it a
5 step back. When you're making the decision
6 whether to use vecuronium, what is the
7 checklist you're running through?

8 A. Well, first of all, it's do I need a
9 muscle paralytic agent at all. So we're going
10 to -- I'm just going to give that as a class
11 and set it aside.

12 Then I want to know -- one consideration
13 might be, what do I have available and is there
14 a better drug than vecuronium to use for this,
15 either for rapidity of onset or more likely for
16 how quickly it will wear off. And do -- and
17 does the patient have any contraindications to
18 using vecuronium, such as a previous
19 anaphylactic reaction to vecuronium, or are
20 they on other drugs that might make the
21 administration of vecuronium dangerous.

22 And a typical -- there is a well-known
23 combination, for example, of vecuronium and
24 sufentanil that can cause cardiac arrest, so --
25 but sufentanil is not present in most patients,

1 so...

2 Q. Okay. So now we're going to go back even
3 another stage. When you're deciding whether to
4 use a muscle paralytic, what's that checklist
5 of considerations you run through?

6 A. Well, in an emergency situation or -- I
7 mean, if it's an elective surgical case, the
8 decision to use an airway includes, one, does
9 the patient have risk factors that they will --
10 that they would, if they didn't have an airway
11 in place, even if they were breathing on their
12 own, vomit and aspirate and potentially die
13 from that. So if they have risk factors for
14 that, I'm going to want to intubate them.

15 Two, does the patient have risk factors
16 such that under the course of general
17 anesthesia or due to mechanical factors in the
18 surgery, they're not going to be able to
19 breathe well enough on their own. Laparoscopic
20 procedures present a physical scenario in which
21 patients can't breathe well even if they're not
22 paralyzed.

23 Three, I'm going to want to then look at
24 them and look at whether they have risk factors
25 in the physical makeup of their airways such

1 that I'm going to have a difficult time getting
2 that airway secured once I give the vecuronium,
3 or assisting their ventilation once they're
4 paralyzed until I get that airway secured.

5 So if I see a patient, for example, who I
6 think will be difficult to intubate or
7 ventilate, I'm not going to give them
8 vecuronium in terms of a muscle relaxant
9 because I would condemn -- I might be
10 condemning them to a failed intubation and a
11 suffocating death.

12 So then, of course, I'm going to look
13 at -- for -- also for whether I need a
14 paralytic agent -- well, I think I've covered
15 it, the -- whether the surgery requires it.
16 So, for example, I might not need it at all for
17 myself, but the surgeon needs it. And so, I'm
18 going to say, I need a muscle paralytic agent,
19 which of my muscle paralytic agents do I prefer
20 to use and do I even have a choice depending
21 upon where I'm working.

22 Q. And what are different surgeries where a
23 paralytic agent is used?

24 A. I think we've talked about this before,
25 but any -- any surgery in which movements would

1 be a disaster and -- and we don't require
2 movement as part of the monitoring in the case.
3 In other words, you might not want in a
4 delicate eye surgery, intraocular surgery,
5 to carry -- certain of those to carry out
6 without muscle relaxant.

7 Any surgery in which the surgeon requires
8 muscle relaxation, either for access or for
9 parts of the procedure. Any surgery in which
10 we need to interrupt the breathing and control
11 it with a machine, such as surgery on the
12 lungs. These are examples of surgeries that
13 might require it.

14 Q. Does vecuronium bromide have any effect
15 on the heart?

16 A. It has -- not directly. It has something
17 called a vagotonic effect, meaning it actually
18 affects a nerve that dictates -- it has a mild
19 effect on a nerve called the vagus nerve that
20 affects the heart rate, and -- so it can -- I'm
21 sorry, I said vagotonic. It can be vagolytic,
22 which means we see after some agents like
23 pancuronium, vecuronium a slight rise in heart
24 rate due to that drug alone, but it's not due
25 to a direct action on the heart. It's due to

1 an action on a nerve.

2 I'm going to stop for a moment. I
3 just -- could I take like a three-minute break
4 to go use the bathroom?

5 MR. MITCHELL: Sure. Actually, if we
6 want to break for -- we can do that or we can
7 break for lunch, which I was planning on doing
8 at some point.

9 MR. KURSMAN: Yeah, how about we
10 break for lunch right now, if that's okay with
11 both of you?

12 MR. MITCHELL: Yeah, that's fine.
13 Does that work for Alex and Dr. Van
14 Norman and court reporter, what if we came back
15 at like 1:10 Central, which is 50 minutes from
16 now? I apologize for the delay, but I got to
17 run to Jimmy John's.

18 (An off-the-record discussion was
19 held.)

20 MR. KURSMAN: Let's do 5-0, if that's
21 fine with you, Rob.

22 MR. MITCHELL: Yep. And, Ms. Court
23 Reporter, does that work for you? Okay, so
24 1:10 Central. 5-0 minutes from now.

25 (Lunch break.)

1 BY MR. MITCHELL:

2 Q. Dr. Van Norman, we're back on the record
3 after taking a lunch break. I don't know if
4 it's lunch in the Seattle area for you or what.

5 During our break, did you speak with
6 anyone?

7 A. No.

8 Q. Did you review anything?

9 A. Nope, just the walk around the block with
10 the dog.

11 Q. And before we took a break, we were
12 talking about vecuronium bromide. Dr. Van
13 Norman, what is the largest dose of vecuronium
14 bromide you've ever administered to a patient?

15 A. You mean as one bolus?

16 Q. Yes.

17 A. I actually don't know. It's going to be
18 between 10 and 20 milligrams. It's probably
19 closer to 10, but I don't know the exact dose.

20 Q. What's the maximum amount of vecuronium
21 bromide you administered to a patient in a
22 24-hour period?

23 A. Oh boy, for longer surgery, that might
24 be -- that might be considerably more, but I
25 don't know. It's not going to be -- it's not

1 going to exceed 30 milligrams, for example,
2 but I -- if I had an eight-hour surgery
3 paralyzing somebody, it might add up to quite a
4 bit, so...

5 Q. For the -- what would an eight-hour
6 surgery be? What would be an example of an
7 eight-hour surgery where you'd administer, you
8 know, 20 milligrams or so of vecuronium
9 bromide?

10 A. There are lots of what are called neck
11 dissections where people have head and neck
12 cancers and they not only have to have the
13 cancer taken out, which is the long part of the
14 procedure, but they would have a dissection of
15 the lymph nodes and everything in the neck.
16 It's not unusual for those to go eight hours.

17 Liver transplants can go -- we have
18 actually had -- back when I was doing them, we
19 had several that went more than 24 hours. It's
20 not usual for them to do that, but it can
21 happen.

22 It is -- it was not unusual when I was
23 training for specialized heart cases to go for
24 more than 12 hours.

25 So there are long surgeries. They aren't

1 the most common, but I couldn't -- I would not,
2 by the way, have used vecuronium. In many of
3 those cases, vecuronium wouldn't have been
4 available during some of that. And I can't be
5 sure, you know, what I would have administered
6 for such cases, but just to let you know, it's
7 possible.

8 Q. Vecuronium would be possible in those
9 cases?

10 A. Yes.

11 Q. For the 10- to 20-milligram bolus dose of
12 vecuronium that you mentioned a moment ago, do
13 you remember what that medical procedure was?

14 A. No. You're just asking -- you were just
15 asking what's the maximum dose, and I know that
16 I have at times gone above 0.1 per kilo to,
17 like, 0.15 and that I do a hundred milligram --
18 excuse me, hundred kilogram patient, so I know
19 it's been in there, but I wouldn't have a
20 specific surgery I could point to.

21 Q. What's the largest dose of vecuronium
22 bromide you've ever been present for a patient
23 to receive that you didn't administer yourself?

24 A. I really don't know. I don't have an
25 answer for that.

1 Q. Would it be within that range we've
2 talked about?

3 A. I think so. I think so, yeah.

4 Q. How much vecuronium bromide would it take
5 to paralyze an average adult, hundred-kilogram
6 adult for 30 minutes?

7 A. To completely paralyze them, an
8 average -- if we said an average was between 70
9 and a hundred kilograms, say, which is kind of
10 the size these days, it would be between 7 and
11 10 milligrams.

12 Q. Do neuromuscular blockers double the
13 possibility of a patient being aware during
14 surgery?

15 A. Clinical studies have shown that the --
16 not aware. There is -- because we -- the
17 studies didn't test awareness, they tested
18 recall. And it was found that in patients who
19 had received neuromuscular blockers of any kind
20 during surgery, the chances of them having
21 recall, which means they were aware, was
22 doubled.

23 We don't know how many of those patients
24 were aware, because many more patients are
25 aware than actually have recall of it. So I

1 can't make a statement about that.

2 Q. So in order to have recall, do you have
3 to be aware?

4 A. Of course. In order to remember
5 something, you have to experience it.

6 Q. And be aware that it's occurring?

7 A. That's correct, but you can certainly be
8 aware of things and not recall it. And so,
9 that's the -- that's a much larger group of
10 patients. We know that from the IFT. And the
11 studies that looked at neuromuscular blockade
12 and recall were very -- were pretty early
13 before there were good studies of awareness, so
14 we don't have that number.

15 Q. So just to make sure I understand,
16 awareness is a predicate for recall, but recall
17 is not a predicate for awareness; does that
18 make sense?

19 A. That's correct, yes.

20 Q. Okay, is that right?

21 Okay. And so, so then going back to the
22 question, neuromuscular -- your position would
23 be that neuromusculars double the possibility
24 of a patient recalling during surgery?

25 A. Right. And so, yeah, it may -- it may

1 also double -- it likely also doubles the risk
2 of awareness, but the test was actually recall.
3 And I want to be pretty specific about that, I
4 don't want to -- I want to be clear because
5 there's so much confusion about these early
6 studies who said, we tested awareness, when
7 they didn't test awareness. They tested
8 recall. And so, they were testing a very small
9 subset of patients who were actually aware.

10 Q. Actually aware or actually recalling?

11 A. They were testing aware patients, and the
12 number of patients -- I'm sorry, they were
13 testing -- see, I get it, too.

14 They were testing the patients who
15 recalled their surgery, and that is a very
16 small number of patients. The number of
17 patients that are aware during surgery is much
18 larger, but the studies that I am aware of
19 looking at neuromuscular blockade says that
20 more -- many more patients recalled their
21 surgery if they had neuromuscular blockade
22 given during the surgery.

23 Q. Okay. And what studies are those?

24 A. I've quoted them in my report. I'd have
25 to pull up the report and look for that

1 citation, but you have the citation, so...

2 Q. Okay, and you don't remember them
3 offhand?

4 A. No. I mean, we've -- between the --
5 among the experts, we've probably thrown around
6 something like 300 citations, and so I'm not
7 going to rely on my memory for that.

8 Q. Okay. Do muscles send signals to the
9 brain?

10 A. No.

11 Q. Okay. Can muscles wake the brain up?

12 A. That -- I'm not sure what you're asking.
13 I mean, there are nerves in muscles that send
14 sensation to the brain. Is that what you mean,
15 or do you mean the actual muscle fibers
16 themselves?

17 Q. No. I mean, that's a fair distinction.
18 I guess I was thinking -- I thought those
19 nerves were part of the muscle, maybe I'm
20 mistaken.

21 A. Not technically in the way we would
22 described them. We'd say you have nerves that
23 feed the muscle and then you have the muscle
24 fibers itself that make up the muscle. So the
25 nervous system has tentacles that are attached

1 in the muscles that provide signals to and from
2 the brain and spinal cord, but the muscle
3 itself doesn't have its own connection to the
4 brain, if that makes sense.

5 Q. So let's take an example. Someone wakes
6 up in the night with muscle cramps in their
7 calf of their leg. That's the -- the nerve
8 fibers in that muscle are waking up -- are
9 telling the brain to wake up; is that fair?

10 A. I think that's a pretty fair description,
11 yes.

12 Q. Okay. Under that circumstance, could a
13 muscle relaxant reduce a person's ability to
14 wake up?

15 A. No. Muscles -- not for pain, no.
16 Muscles have -- I'm sorry, neuromuscular
17 blockers have no analgesic properties
18 whatsoever, and this has been tested many, many
19 times.

20 So neuromuscular blockers do not relieve
21 pain; meaning, once the fibers, the nerve
22 fibers are sending signals to the brain, pain,
23 pain, pain, the neuromuscular blockers do not
24 change that. What they -- does that make
25 sense, what I just said?

1 Q. I think so. I'm thinking about that.

2 A. Yeah, maybe if you ask the question
3 another way, but...

4 Q. Yeah.

5 Does vecuronium bromide affect
6 consciousness?

7 A. No. It has no effect on consciousness at
8 all. None of the muscle relaxants do, muscle
9 paralytics do.

10 Q. What is potassium chloride?

11 A. It's an electrolyte. You know, it's an
12 electrolyte salt. Potassium and chloride
13 together are really a mineral salt, and the
14 electrolyte on that is potassium. It's a
15 natural-occurring mineral, and it also occurs
16 throughout various tissues in the body. And
17 it's particularly important in neural
18 transmission, particularly things like the
19 electrical transmission in the heart. It also,
20 though, facilitates muscle contraction, so...

21 Q. So in medicine, what is potassium
22 chloride used for?

23 A. If you don't have a normal potassium
24 chloride level, we would use potassium chloride
25 level to correct that. And so -- if it were

1 low. And the reason we would is that a low
2 potassium chloride can lead to, in some cases,
3 muscle cramps because the effect of potassium
4 in the muscles causes some contraction.

5 But more importantly, low potassium
6 chloride can cause heart arrhythmias, so the
7 heart can go into an arrhythmia or even stop if
8 your potassium level is too low or too high.

9 And we would obviously not treat a high
10 potassium level with potassium. We would treat
11 a low level with it. We'd treat a high
12 potassium level in other ways.

13 Q. And so, is potassium chloride used in
14 order to treat arrhythmias?

15 A. Only if the potassium level is low. I
16 mean, if you had an excessively low potassium
17 level -- I guess it's kind of a funny way to
18 ask the question in that I wouldn't treat the
19 arrhythmia with the potassium. I'd use an
20 anti-arrhythmic drug, but to make the
21 arrhythmia stay under control, I would correct
22 the potassium. So my actual treatment of the
23 arrhythmia would be something else.

24 Q. What else is potassium chloride used for
25 in medicine?

1 A. That's the main thing. It's added as an
2 electrolyte into, for example, IV solutions
3 variously, because if we don't, putting more
4 fluid in a bloodstream actually lowers the
5 potassium of the bloodstream. So we're
6 preventing the potassium level from changing,
7 but those -- it's really about maintaining
8 normal electrolyte balance for the reasons I
9 mentioned.

10 Q. Do you use potassium chloride in your
11 medical practice?

12 A. I have. In anesthesia, the actual use of
13 potassium chloride, other than as a normal
14 additive that the IV's come with for the
15 reasons I mentioned, is pretty rare.

16 But in -- when I was in internal
17 medicine, we -- I administered potassium to
18 patients who had low potassium a number -- many
19 times. I mean, it was not a rare occurrence,
20 so...

21 Q. Would you administer potassium chloride
22 in the context of cardiac anesthesia?

23 A. Again, only if the potassium level were
24 low -- well, let me back up.

25 There are two ways potassium is used in

1 cardiac surgery, and it might be administered
2 by the anesthesiologist. The most common
3 reason I, as the anesthesiologist, would be
4 administering potassium chloride would be to
5 correct a low level so that I could prevent an
6 arrhythmia in the heart.

7 But the actual most common use of
8 potassium chloride in cardiac surgery is to
9 stop the heart so that they can operate on it.
10 And -- and, I'm sorry, it would be uncommon for
11 me to be administering it, although quite
12 possible. More often, that would be put in the
13 bypass machine, in what's called the
14 cardioplegia solution.

15 Q. And how does the potassium chloride stop
16 the heart so it can be operated on?

17 A. Oh boy. Well, let's give you the
18 CliffsNotes version. The way electricity --
19 the way contraction in a heart is generated,
20 the way the electrical conduction system of the
21 heart, which is not a nerve system by the way,
22 that is actually a heart tissue that has
23 electrical activity, is it relies on a balance
24 between potassium and sodium inside and outside
25 of any individual muscle cell.

1 And what the electrical tissue in the
2 heart does is it sets off an impulse that opens
3 the cell to allow potassium ions and sodium
4 ions to flow across the membrane, and that
5 creates an electrical current. That's as much
6 as I can get into it right now.

7 So potassium, in terms of heart
8 surgery -- well, potassium affects the way in
9 which electricity flows around the heart and
10 the magnitude of the response to that, whether
11 the heart is going to go into an arrhythmia,
12 whether it's going to be irritated by a lot of
13 electrical signals from the cardiac conducting
14 tissue.

15 Q. How long does it take potassium chloride
16 to stop the heart?

17 A. Depends on the dose you give, but -- and
18 it depends on the administration. Is it being
19 given directly into the heart or is it being
20 given in a peripheral vein? What -- in
21 either -- and what's the dose -- yeah, and
22 what's the dose, so...

23 Q. Let's say it's given through a peripheral
24 vein.

25 A. And the dose?

1 Q. Ten milligrams.

2 A. Milliequivalents?

3 Q. Milliequivalents.

4 A. It's not measured in milligrams. It's
5 measured in how many ions there are in
6 solution.

7 Ten, if it's given slowly through a
8 peripheral vein, might not stop the heart at
9 all, but it has to be given slowly. It's
10 not -- a 10 is not necessarily a cardiac arrest
11 dose.

12 Q. Forty milliequivalents?

13 A. You could stop the heart with 40
14 milliequivalents, particularly if it's given
15 directly into the heart. If you give it very
16 rapidly in a peripheral vein, you would
17 certainly get severe pain, but -- and you would
18 certainly get some sort of arrhythmia, but you
19 might not get a complete cardiac arrest.

20 Q. So if a medical professional wanted to be
21 certain to stop the heart and was delivering
22 potassium chloride through a peripheral vein,
23 how much potassium chloride should they
24 deliver?

25 A. I would be totally guessing, but I would

1 say that in terms of what they can -- what the
2 certain dose is, so I -- because obviously, I
3 never used that drug in that way, but I can
4 assure you if you gave a hundred
5 milliequivalents by vein, you would stop the
6 heart.

7 Q. Have you ever given a patient an infusion
8 of potassium chloride too rapidly?

9 A. Yes.

10 Q. How many times?

11 A. I think it only takes once. In the
12 particular case, and I remember it because it's
13 a learning case for me, it was not very
14 serious. This was 25 -- it was a standard
15 what's called piggyback for the IV. It was in
16 this case 40 milliequivalents of potassium
17 dissolved in a liter of fluid, and I ran the
18 fluid at about 200 CCs per hour rather than the
19 prescribed 100 CCs per hour, and that is too
20 rapid.

21 The effect it had was the patient had
22 pain in their IV. It didn't have an effect on
23 the heart because when they had pain, we
24 stopped the infusion, and they had gotten far
25 less than even 10 milliequivalents of

1 potassium.

2 So I've never had an instance in which I
3 gave a dangerous bolus of potassium too
4 quickly.

5 Q. How did you know you had given it too
6 rapidly?

7 A. The patient told me it hurt.

8 Q. Like in the moment?

9 A. In the moment, yeah.

10 Q. And what did the patient say?

11 A. Oh, ow -- something like, oh, ow, my arm
12 is burning. I don't remember the exact words,
13 but he said words to the effect that, wow, that
14 IV hurts, so -- and that was a very small dose
15 of potassium.

16 Q. We've talked a little bit throughout the
17 day about stimulus or stimuli in the context of
18 anesthesia. Can you give me some examples of
19 stimuli?

20 A. Well, I mean, you can have all sorts of
21 stimuli. In terms of -- you can have just very
22 light stimuli that are neither noxious nor
23 painful. An example of that would be brushing
24 someone's eyelids or calling their name.

25 You can have painful stimuli, which could

1 be mildly painful, such as, oh, I don't know,
2 the patient's laying wrong or whatever. I
3 can't -- I'll think of it in a minute, I'm just
4 kind of going blank.

5 Moderately painful would include things
6 like pinching a muscle or things like that,
7 physically on a patient.

8 And you can have very severe -- severely
9 painful stimuli by, say, taking a big knife and
10 cutting them open from the bottom of their
11 sternum to their pelvis.

12 You can have what we call noxious
13 stimuli, which is in general another word that
14 lay people substitute pain for where a patient
15 is experiencing a horrible sensation, but it
16 isn't -- but -- and they might even describe it
17 as pain, but we describe it differently.

18 So you can have, for example, a sensation
19 like you can't breathe, which is an extremely
20 powerful stimulus, or you can have a sensation
21 like something makes you itch. That's a
22 noxious stimulus, but it may not be severe.

23 So what else -- I'm trying to give you a
24 scope of what we're --

25 Q. Yeah.

1 A. You know.

2 Q. That's helpful.

3 So I think, if I'm hearing you correctly,
4 noxious stimuli and painful stimuli are not the
5 same?

6 A. They are in lay terms. They are the same
7 in lay terms, when people describe it. I'm
8 trying to say, well, do they -- do those two
9 different stimuli activate the same nerve
10 systems, they don't, but they cause the same
11 kind of experience in the brain, if that makes
12 any sense to you.

13 Q. So, you know, in a routine procedure,
14 what are examples of some noxious stimuli?
15 Like, would intubation be a noxious stimulus?

16 A. It's a moderate stimulus. It's not
17 nearly as bad as surgical incision, but it
18 certainly stimulates patients. And if we don't
19 have them appropriately premedicated, many of
20 them will respond if they're not paralyzed.

21 Q. Do patients typically respond to
22 intubation?

23 A. No, because I've usually paralyzed them
24 for intubation, so they wouldn't be able to
25 respond.

1 Q. Okay. Would they be aware that the
2 intubation was happening?

3 A. A lot of them might be, yes. And
4 patients do actually report -- after some
5 procedures will report on intubations.
6 That's -- and that means, by the way, not only
7 they were aware but they recall it.

8 MR. KURSMAN: And, Rob, just to
9 clarify your question, would they be aware that
10 the intubation is occurring, what -- what
11 anesthetic drugs are you -- in this
12 hypothetical are you suggesting that they have
13 been given before --

14 MR. MITCHELL: I'm just asking if
15 it's routine in her practice. I'm not ironing
16 down, you know, any particular drugs.

17 MR. KURSMAN: Okay.

18 BY MR. MITCHELL:

19 Q. So talking about awareness, because you
20 have a section in your report that talks about
21 terminology, Dr. Van Norman, what -- when you
22 say awareness, what is awareness in the context
23 of anesthesia?

24 A. Well, it's not just when I say it. When
25 experts talk about awareness, we're talking

1 about a patient being in the moment and
2 experiencing what's going on in the operating
3 room. When we're talking about awareness
4 during a surgery, for example, let's take that
5 example, we're talking about a patient being
6 conscious of what's going on with them during
7 the surgery, end of story.

8 Q. Okay. How do you -- well, do you monitor
9 awareness in patients during surgery?

10 A. There is no monitor for awareness during
11 patient -- for patients during surgery. We
12 certainly do monitor some things, but most of
13 them have been shown not to correlate with
14 consciousness.

15 And things that most anesthesiologists
16 monitor and that I have, too, are -- I
17 mentioned earlier in this deposition, are they
18 sweating, are they tearing, are they -- if they
19 can move, are they moving, are they vocalizing
20 if they haven't been given a muscle relaxant
21 and can vocalize? Does their heart rate go up,
22 does their blood pressure go up?

23 However, studies of actual awareness
24 under anesthesia have shown that blood pressure
25 and heart rate only change in a random sampling

1 of patients, literally half, might as well take
2 a coin and toss it. And so, it's -- even
3 though we do it, it doesn't really tell us
4 much, but we don't have anything else that we
5 can do.

6 Q. So are the vast majority of patients
7 aware even under general anesthesia?

8 A. The studies with the isolated forearm
9 technique, which is the golden standard for
10 studying awareness, indicate that under general
11 anesthesia, many, if not most patients are
12 aware and if given the opportunity to respond
13 and asked to, they will.

14 We also know of cases where patients are
15 aware and could have responded but didn't. So
16 the answer to that is, the majority appear
17 under most studies of awareness to be aware
18 during the surgery.

19 Q. During general anesthesia?

20 A. Yes.

21 Q. Do you agree with those studies'
22 conclusions?

23 A. I do.

24 Q. Is it possible that maybe even all
25 patients are aware when under general

1 anesthesia?

2 A. I have -- I have not seen a study that
3 shows that all are aware, and so I'd have to
4 say that I don't know the answer to that. I
5 don't have any way of knowing that. All I can
6 tell you is the degrees that studies have
7 detected awareness.

8 Q. So this vast majority of patients who are
9 aware under general anesthesia, do they -- can
10 they experience pain?

11 A. Absolutely. The studies show that a
12 large number of them will actually, in the
13 moment on the IFT, report that they're having
14 pain.

15 Q. And --

16 MR. KURSMAN: Again, I just want to
17 clarify with you, Rob, when you're talking
18 about under general anesthesia and awareness,
19 are we also talking about that they're
20 receiving a combination of drugs for general
21 anesthesia, including analgesics, or are you --

22 MR. MITCHELL: Well, I'm just talking
23 about general anesthesia. I mean, we're not --
24 we haven't ironed out those hypos, I mean, but
25 it's Dr. Van Norman's position, my

1 understanding is, is that midazolam doesn't
2 apply to general anesthesia. So I'm just
3 understanding her practice as an
4 anesthesiologist.

5 MR. KURSMAN: Sure, okay.

6 THE WITNESS: Well, okay. Then I --
7 yes, I will -- but I will make a caveat that
8 the studies of awareness -- the issue of pain
9 under general anesthesia may be different
10 depending upon the different types of general
11 anesthetic regimens that are present.

12 We're talking -- you're talking about
13 general anesthesia, which in these cases -- in
14 these studies has included a combination of
15 drugs. And yes, the majority have been shown
16 to be aware.

17 BY MR. MITCHELL:

18 Q. And also, a large number of them can
19 experience pain under general anesthesia; is
20 that correct?

21 A. Yes, presumably, depending upon which
22 drugs they receive.

23 So you haven't -- you haven't asked me
24 which drugs they received and what the studies
25 show on that. And so, depending upon which

1 drugs they receive, they may experience pain.

2 There are also some studies of awareness
3 using single drugs just to see how different
4 anesthetic drugs affect awareness and pain
5 perception that indicate that it's possible
6 that there's a different experience depending
7 upon which drugs are used.

8 Q. So what would be an example of drugs
9 where someone would experience or could
10 experience pain under general anesthesia? What
11 drugs would have been administered?

12 A. Well, in several studies using midazolam
13 in significant doses, meaning about 0.3
14 milligrams per kilogram, and higher and
15 alfentanil, one of the potent narcotics, up to
16 72 percent of women undergoing a full-on major
17 gynecologic procedure with an open pelvis
18 responded on the IFT, and a significant number
19 of them, I think it was two-thirds, reported
20 that they were in pain during the surgery.

21 Q. Was that an ethical study?

22 A. It was -- yes, it's an ethical study
23 because it was done under the standard
24 conditions of doing anesthetics. It's just
25 that they did some special test to -- they did

1 the IFT to look for awareness. And so, there's
2 nothing unstandard about that practice.

3 Q. Now, you mentioned midazolam, for
4 instance. Is midazolam used for general
5 anesthesia?

6 A. Midazolam is never used as a general
7 anesthetic, but it is used as an adjunct drug
8 in general anesthesia, as we talked about
9 previously in this deposition, to provide
10 relaxation, lack of anxiety and lack of recall
11 of disturbing experiences.

12 Q. And when you, as an anesthesiologist, use
13 the term "responsiveness," what is
14 responsiveness?

15 A. Responsiveness means that you are not
16 merely perceiving; in other words, you're aware
17 and perceiving, but you are creating a physical
18 movement or a physical -- visible physical
19 response that shows that you've received it.

20 So when we talk about responsiveness in
21 anesthesia and responsiveness in the awareness
22 studies, we're talking about whether the
23 patient did something when they became aware.
24 And you can become aware and not do anything,
25 can still remain unresponsive.

1 Q. Is awareness a predicate for
2 responsiveness?

3 A. It is -- it is for the kind of
4 responsiveness we look for on that test.
5 Technically, yes, I would say so, because
6 reflexes are not a response. They don't
7 involve a brain arc saying, oh, this is
8 happening to me, so I'm doing this. And so,
9 movement can indicate response -- usually
10 indicates responsiveness, but -- anyway, yeah.
11 So...

12 Q. So what tests do you use to monitor
13 responsiveness?

14 A. I watch the patient.

15 Q. Okay, just eyesight?

16 A. Well, yes, or if any of my other monitors
17 indicate that the patient is moving, but
18 basically I'm watching for movement in those
19 patients -- I'm watching for it in all
20 patients, but particularly in those patients
21 that are not paralyzed by a muscle relaxant.

22 Q. And how do you, as an anesthesiologist,
23 pay attention to recall in your patients?

24 A. Poorly, because it's hard to -- recall
25 itself is quite rare and we haven't really

1 figured out the right test for it. But one
2 thing that most anesthesiologists and I
3 certainly do is after the anesthetic is over
4 and the patient is awake and acting normally,
5 so they're no longer sleepy, they're no longer
6 under the influence of any drugs that I can
7 see, I ask them what is the last thing that
8 they recall before or at the time of going in
9 the operating room. Did they have any
10 particular dreams or experiences that they want
11 to report to me in the operating room, what
12 were -- and if they do, and sometimes they do,
13 even though it's -- it's not awareness of the
14 surgery, and we can get to that, I ask them
15 about how disturbed they feel by that, if they
16 feel like they -- if it was a bad experience
17 for them or if it was okay, and I ask them if
18 they want to have me explain more of what might
19 have happened.

20 In cases where patients are traumatized
21 by this, I offer -- and this has only happened
22 really once in my career. I offered the
23 patient psychological counseling about it,
24 which he felt he didn't need because he felt
25 the most reassuring thing was to understand

1 what had happened to him.

2 Q. And did you say there's no tests for
3 monitoring recall?

4 A. Well, what I mean -- the only test is ask
5 the patient about recall, but it isn't simply a
6 matter -- you can't simply ask just, what do
7 you recall, because sometimes -- you have to
8 ask the question in several ways. It's been
9 shown even in the Russell tests that if you ask
10 the patient a couple of different ways, they're
11 more likely to actually report recall to you
12 than if you just ask, did you remember
13 anything, for example.

14 So the only guidance on that in terms of
15 interviews is really to ask, do you have any
16 recall, did you have any dreams, anything --
17 any experiences that you want to report to me.

18 Q. And is recall the same as remembrance?

19 A. Yeah.

20 Q. And is recall of concern during a lethal
21 injection execution?

22 A. Of course not, the prisoner isn't going
23 to remember anything.

24 Q. Right, because the prisoner would be
25 executed?

1 A. That's right. Recall requires that you
2 survive to recall it. And in this case, recall
3 makes no difference. What we're concerned with
4 was, were they aware?

5 Q. If an execution was called off after an
6 inmate had received the dose of midazolam and
7 vecuronium bromide under Tennessee's protocol,
8 would the inmate be able to remember receiving
9 the administration of those two drugs?

10 A. It's very doubtful.

11 Q. And why is that?

12 A. Because midazolam prevents them from
13 remembering.

14 Q. Would -- okay. Would the inmate survive
15 if the inmate had received the dosages called
16 for by the protocol?

17 A. If the execution were called off,
18 presumably we would then support the patient's
19 breathing because you've given a paralytic
20 agent and they can't breathe. You wouldn't
21 just sit there. And so, it wouldn't be fatal
22 to them.

23 There's nothing intrinsically fatal about
24 midazolam. It can affect breathing, but you
25 can survive that if you're given the right

1 support.

2 Q. Could a 500-milligram dose of midazolam
3 kill an inmate?

4 A. If it could, it would be because there is
5 airway obstruction that occurs. Midazolam does
6 cause relaxation of the muscles in the neck and
7 throat, and it's possible that it could, in
8 sufficient doses, cause relaxation of those
9 muscles enough to obstruct the airway so that
10 the inmate couldn't breathe, but it would not
11 kill the inmate in a short period of time.

12 Q. And would 500 milligrams of midazolam be
13 sufficient, though, to kill the inmate?

14 A. I know of no studies of that to know for
15 sure. There's never, to my knowledge, been a
16 clinical study of 500 milligrams of midazolam.

17 Q. Do you think, based on your experience
18 with midazolam, that 500 milligrams of
19 midazolam administered to a patient
20 intravenously and left alone would kill the
21 patient?

22 A. Again, I don't have any experience with
23 that. And I don't know what the sufficient
24 dose would be to cause reliable airway
25 obstruction in patients or in inmates that have

1 been given midazolam. So I really can't answer
2 that question with any science basis at all.

3 Q. How quickly -- if an execution was called
4 off after the administration of 500 milligrams
5 of midazolam and a hundred milligrams of
6 vecuronium bromide, how quickly would support,
7 you know, ventilation have to be brought to the
8 inmate in order to save the inmate?

9 A. That'll be dependant on factors related
10 to the inmate, because it'll depend on how
11 rapidly the inmate's blood oxygen level has
12 fallen during that time. Has it fallen -- you
13 know, how long it takes for the blood oxygen
14 levels to fall to dangerous enough levels that
15 the heart is going to experience an arrhythmia
16 and stop, or that the brain will experience
17 irrevocable damage and they'll be brain dead.

18 And that's going to vary from inmate to
19 inmate depending upon how -- their own oxygen
20 carbon dioxide kinetics, their body habitus,
21 what position they're in, and whether -- and
22 little things like did they take a deep breath
23 when the midazolam was given. So it would
24 depend and there'd be a range.

25 Q. And what would that range be?

1 A. I don't know the short end of the range
2 because that would depend entirely on inmate
3 factors. So there'd be a period of time that's
4 totally inmate dependant.

5 What we know from both understanding
6 asphyxia in humans and something called
7 noncompressive asphyxia in dogs, noncompressive
8 asphyxia is where you don't do anything to
9 strangle the person, okay, you just give them a
10 drug to stop their breathing. That's what
11 we're talking about. When you give the
12 vecuronium, you're going to stop their
13 breathing. And in a dog, it will take more
14 than 15 minutes for that dog to die.

15 Q. And there are no studies on that in
16 humans?

17 A. Well, we know something of it from
18 studies in humans who have undergone asphyxia
19 due to other causes. And we also know the
20 mechanics of hemoglobin and oxygen and carbon
21 dioxide in humans.

22 We know that if you have a person who's
23 breathing who's then given vecuronium, the
24 mechanics would suggest that it will take
25 several minutes for the lungs themselves to be

1 emptied of the oxygen reserve that's in the
2 lungs. And then it will take probably four or
3 five or six minutes longer for the blood oxygen
4 levels to fall to dangerously low levels that
5 could damage the brain, kill the brain or stop
6 the heart.

7 And then once that happens, it will take
8 about four minutes in the brain for permanent
9 damage to set in, additional, and about the
10 same in the heart, and ten minutes for the
11 whole brain. So you can add that all up.
12 That's three plus six, we're out at around 15
13 again.

14 So the mechanics of what we know what
15 happens to blood oxygen in a nonbreathing
16 patient would tell us that we're going to get
17 out in that range in about the same period of
18 time. 15 minutes would be what I would say.

19 Q. And is that timeline you just mentioned
20 assuming a patient receives a clinical dose of
21 vecuronium bromide?

22 A. It assumes any dose of vecuronium bromide
23 that would stop the breathing, stop -- stop
24 the --

25 Q. So that -- that even assumes the -- does

1 that assume a hundred milligram dose of
2 vecuronium bromide?

3 A. It assumes any dose that would stop the
4 breathing. Whether it's five or whether it's
5 500, it's what dose -- it isn't the dose
6 itself. The dose -- vecuronium itself does
7 nothing directly to kill an individual. What
8 it does is it paralyzes the muscles that
9 sustain breathing, and that's what kills the
10 individual. So whatever dose you give that
11 stops the breathing will have the same effect.

12 Q. Inmate dependant, what's the other end of
13 that range, assuming an inmate with
14 comorbidities?

15 A. Other end, I'm sorry, which -- I
16 apologize, I don't know what you mean by other
17 --

18 MR. KURSMAN: Objection.

19 BY MR. MITCHELL:

20 Q. Well, I think you were saying for a
21 healthy individual, normally you would
22 expect it -- you would expect it to take 10 to
23 15 minutes for the vecuronium bromide to kill
24 the individual, but you had said there are
25 certain inmate-specific or person-specific

1 factors. And so, I'm wondering -- and my
2 understanding was those factors were at the
3 other end of the range. So what's the short
4 end of how long?

5 A. Well, and first of all, I didn't say 10
6 to 15 minutes. I said 15 minutes, that's what
7 we have the calculations for and that's what we
8 have the evidence for in clinical studies.

9 Q. Is that in the animal studies or with
10 humans?

11 A. I said the animal -- the animal studies,
12 and also understanding how the process of
13 asphyxia in human beings, which are clinical
14 studies.

15 And so, the -- I think what you're asking
16 me is, would some inmates die quicker than
17 that, and the answer is not much. There might
18 be a slight effect, for example, if the inmate
19 had severe pulmonary disease and started with a
20 very low oxygen level to begin with, you might
21 shorten that by two or three minutes, because
22 that's the part of the oxygen dissociation
23 curve that involves emptying out the reserve
24 volume in the lungs.

25 If you have an especially heavy inmate,

1 it's exactly the same thing but for a different
2 reason. The weight of their body might empty
3 out the reserve volume in the lungs, might
4 press on the reserve volume in the lungs, but
5 again, you'd only be talking about perhaps a
6 two-minute difference. So I don't think you're
7 going to see much variation in this from inmate
8 to inmate, but it will vary a little bit.

9 Q. Is it possible that a hundred-milligram
10 dose of vecuronium bromide delivered
11 intravenously could kill someone in under five
12 minutes?

13 A. I -- somebody who's breathing room air?
14 I cannot imagine that, no.

15 Q. Okay. And you don't think it's possible?

16 A. I don't think it's possible, if we --
17 given the caveat that we have a normal patient
18 or a normal inmate breathing room air who
19 doesn't have -- isn't already -- already
20 dangerously low in oxygen. And even then, it
21 would still take the obligate four minutes for
22 reversible damage in the brain and heart to
23 occur, and an additional -- and ten minimum to
24 get permanent damage. So no, I can't -- I
25 don't think so. I think you would be standing

1 there for 15 minutes waiting for someone's
2 heart to stop.

3 Q. What -- switching gears, Dr. Van Norman,
4 as an anesthesiologist, what is consciousness?

5 A. That's kind of an existential question.
6 When we talk about consciousness, we're talking
7 about sufficient connections within the brain
8 such that the brain can perceive its
9 environment and, for lack of a better word,
10 enjoy it or experience it. It doesn't mean
11 that they can respond to it, but they can
12 experience it. So the brain on some level
13 understands what's happening to it or to the
14 body.

15 Q. Do you monitor consciousness as an
16 anesthesiologist?

17 A. We monitor responsiveness. There's no
18 way to monitor consciousness.

19 Q. Can you monitor responsiveness via your
20 sense of sight?

21 A. Yes. And as I mentioned, if there are --
22 if my monitors are indicating that the patient
23 is beginning to respond in a physical way, then
24 I can monitor that, as well.

25 Q. And what monitors do you use for

1 monitoring that?

2 A. Well, I think we've talked about this
3 before. We monitor the EKG and heart rate,
4 blood pressure, pulse oximetry. We watch to
5 see if the patient's moving. We monitor -- we
6 monitor the patient's level of paralysis so
7 that we know if what we're -- you know, so that
8 we can adjust it if we need to see whether the
9 patient is responsive or not.

10 We monitor -- so those are -- those are
11 the monitors that are used in the vast majority
12 of cases.

13 Q. And those monitors are used to monitor
14 responsiveness, not consciousness?

15 A. That's correct.

16 Q. What is connected consciousness?

17 A. Some people divide consciousness, which
18 is awareness of what's happening to the
19 brain -- or the body, right?

20 In cases where the brain is aware of
21 what's happening to it but what's happening to
22 it isn't in the real world, so in dreams, they
23 generally will call that disconnected
24 consciousness. The brain is conscious of
25 what's happening in the dream. You and I can

1 have good dreams or bad dreams and respond
2 physically in the real world to them. We might
3 make vocalizations, we might move in our sleep.
4 Sleepwalkers get up and walk around in response
5 to things that are happening to them that are
6 not real, if that makes sense, or not in the
7 real world. They're real on an emotional sense
8 but not in a physical sense.

9 And connected consciousness is when the
10 brain is aware of and -- the brain is aware of
11 events that are happening in the real world.

12 Q. So if you say conscious or consciousness
13 in your report, assuming you don't use
14 "disconnected," generally are you referring to
15 connected consciousness?

16 A. I'm generally referring to connected
17 consciousness. And I try, I won't say I'm a
18 hundred percent successful, but I try always to
19 point out those instances when I'm referring to
20 disconnected consciousness.

21 Q. And again, disconnected consciousness is
22 dreaming -- are there other examples of
23 disconnected consciousness?

24 A. There are -- the answer's yes, there are
25 certain kinds of psychological conditions and

1 things like fugue states and whatever, but I
2 don't -- I don't think they are any more
3 relevant than the dream state in talking about
4 the difference, so...

5 Q. So when the lay person says
6 consciousness, nine times out of ten at least
7 they're talking about connected consciousness;
8 would that be fair?

9 A. I would think so.

10 MR. KURSMAN: Objection. Objection.

11 BY MR. MITCHELL:

12 Q. When you use the term "consciousness,"
13 are you generally referring to connected
14 consciousness?

15 A. I try to point out those times when I'm
16 not talking about connected consciousness. I
17 don't -- I -- yes, the answer's yes, but I will
18 tell you I'm sure I make mistake now and then
19 and don't -- and forget to mention that I'm
20 talking about one or the other.

21 Q. Is consciousness a continuum?

22 A. Yeah.

23 Q. And do connected consciousness and
24 disconnected consciousness have separate
25 continuums or are they on the same continuum?

1 A. That's a -- you know, I don't know that I
2 can answer that question. I think that they
3 probably operate the same, but I don't know
4 that they are the same.

5 So particularly stimulating things that
6 happen in a dreamlike state are more likely to
7 lead to strong responses in the dream, just as
8 particularly strong stimuli in the physical
9 world are likely to rouse consciousness in a
10 person who -- in a person who may be sleeping.

11 So it's a funny question -- I'm sorry,
12 I'm trying -- I'm struggling with the question
13 because it's kind of funny to ask. There are
14 different -- they're -- there are -- they are
15 consciousness of different worlds literally,
16 and I think it's best to keep them separated
17 for our purposes and talk about them
18 separately.

19 Q. So on the continuum of connected
20 consciousness, what would be some end points on
21 that continuum?

22 A. End points, would -- I apologize --

23 Q. What would be some -- I mean, if it's a
24 continuum, presumably there's degrees of
25 consciousness.

1 A. Well, I guess maybe I can say it a little
2 better. It isn't so much a degree of
3 consciousness as the level of stimulation that
4 is required to have the brain aware of what's
5 happening in the physical world. And so, in
6 different situations, you may have awareness
7 and not in others. But I'm not sure I would
8 say you were more conscious in one situation.

9 There are -- I'm struggling with the idea
10 of -- consciousness is not an all-or-none
11 proposition. There are -- you can have sort of
12 awareness of things that are happening to you
13 and you want to respond to them; and yet, maybe
14 not be able to describe each and every facet of
15 what's happening to you.

16 I guess I'm struggling with almost a
17 philosophical question here. I apologize, but
18 I -- so I -- I'm going to stop. I don't really
19 think I can answer what you've asked.

20 Q. Okay. Well -- okay, so let's take this
21 from a different angle. What's
22 unconsciousness?

23 A. Unconsciousness is a lack of awareness in
24 the brain, a complete lack of awareness in the
25 brain of the physical world. So it's the

1 opposite of consciousness. It's -- it's not
2 having the brain understand that something
3 physical has happened -- with connective
4 consciousness, that something physical has
5 happened in the real world that it needs attend
6 to.

7 Q. So under what circumstances is a person
8 unconscious?

9 A. Now you are asking a philosophical
10 question, because nobody has defined that
11 point. There isn't a medical definition of it.
12 You're talking about a philosophical question.

13 Q. Okay. Well, so just helping me as the
14 inverse of consciousness, are people ever
15 unconscious?

16 A. Again, I'm going to say that's a
17 philosophical question.

18 I think the scientific question you're
19 asking me is, how much connectedness can you
20 lose and not be conscious, and the answer is
21 nobody knows.

22 Q. And so, is it your opinion, as an
23 anesthesiologist, that no -- you can't answer
24 whether anyone is ever unconscious?

25 A. It's my -- no, it's my opinion that as an

1 anesthesiologist, I don't have the definition
2 of where that point is. It hasn't been
3 defined. It hasn't been defined medically, and
4 you're asking me as a medical doctor, and I
5 can't answer that question.

6 Q. When you put people under general
7 anesthesia, have you ever made anyone
8 unconscious?

9 MR. KURSMAN: Objection.

10 MR. MITCHELL: On what basis?

11 MR. KURSMAN: It's been asked and
12 answered repeatedly that -- Dr. Van Norman has
13 said, as a medical expert, she cannot define
14 when a person is conscious versus unconscious.

15 MR. MITCHELL: Can you read my
16 question back, please, Ms. Court Reporter?

17 (WHEREUPON, the record was read as
18 requested.)

19 BY MR. MITCHELL:

20 Q. So you can answer, Dr. Van Norman, even
21 though your counsel made an objection.

22 A. Yeah. Well, I can't answer that
23 question. I don't know. What I do know is
24 that there are probably many patients I have
25 not made unconscious.

1 Q. The vast majority, you have not made
2 unconscious?

3 A. I don't know.

4 Q. So do trained medical professionals
5 mistake people for being unconscious when those
6 people are actually conscious?

7 A. Every single day.

8 Q. Can anesthesia even produce
9 unconsciousness?

10 A. I don't know.

11 Q. What does it mean for someone to be
12 awake?

13 A. That's a lay term, and what it means is
14 that the patient -- generally means is that the
15 patient is fully aroused, the brain is fully
16 aware of what's going on around it and is
17 responding in some way.

18 Q. And if a person is awake, is that person
19 also aware?

20 A. I think -- well, "awake" isn't a
21 technical term here, so I think the way
22 you're -- the way most lay people use the term
23 "awake," they are referring to awareness. But
24 I don't use the term "awake" because it's -- it
25 is not the right term to use, but I think most

1 lay people, when they use it, mean the
2 patient -- they are referring to the process of
3 awareness.

4 Q. When the typical person is sleeping at
5 night, are they aware?

6 A. What stimulation are they getting?

7 When they're asleep at night, they may or
8 may not be aware of things in the environment.

9 For example, many people who dream will
10 incorporate sounds that are occurring in their
11 environment in their dream, and they are
12 conscious. They may not respond to it.
13 They're usually -- it's usually a form of
14 disconnected consciousness.

15 So asking me if they're aware is tough
16 because the brain -- part of the brain can be
17 aware to what's happening in the environment,
18 but that's not what we're talking about when
19 we're talking about medical awareness. We're
20 talking about being connected to the physical
21 environment around them.

22 If -- no.

23 Q. Dr. Van Norman, what is brain depression?

24 A. That, I have no idea. That is not a
25 precise medical term and it has no meaning for

1 me.

2 Q. Okay. Is it a term you're familiar with?

3 A. Not as a precise term. I've heard people
4 talk about depressing the brain, but no, it is
5 not a specific term.

6 Q. Have you ever heard any of your
7 colleagues talk about depressing the brain?

8 A. I've had -- no, not -- no, I actually
9 have never heard that term used by any of my
10 colleagues, either.

11 Q. What is your understanding of what
12 brain -- depressing the brain is?

13 A. As I said, it is a meaningless term to
14 me. I don't know what a person would mean when
15 they're using it.

16 Q. Does the brain need oxygen to function?

17 A. Yes.

18 Q. How so?

19 A. I'm sorry, I don't know what your
20 question means.

21 Q. Well, if the oxygen supplied to the brain
22 is cut off, what happens?

23 A. All cells in the body need oxygen to
24 live. We are oxygen-requiring creatures.

25 The processes in the brain -- the

1 processes in any cell, and this includes the
2 brain, brain cells, which include, like, their
3 metabolism, their growth, their response to
4 stimuli and also their production of critical
5 elements that the cells produce in the brain,
6 this would be neurotransmitters, for example,
7 all depends on chemical processes that utilize
8 oxygen. And without that, those processes
9 stop.

10 Processes that maintain the integrity of
11 the cell so that the cell has an intact
12 membrane and remains an intact cell, there's
13 energy expended at that level that requires
14 oxygen as part of the process to do that. So
15 when you deprive the cells of any part of the
16 body of oxygen, they will die. They happen to
17 die at different rates, but they do all die
18 without oxygen.

19 Q. So what happens if the brain receives,
20 you know, a little less oxygen than regularly?

21 A. Well, there's -- what do you mean by "a
22 little less oxygen"?

23 Q. Well -- okay. Do you monitor oxygen
24 levels to the brain, as an anesthesiologist?

25 A. We monitor the peripheral oxygen

1 saturation of the blood. And we presume that
2 that reflects what the brain is getting, but we
3 do not do any direct monitoring of brain oxygen
4 levels.

5 Q. And can you tell if the brain is getting
6 less oxygen than its accustomed to?

7 A. Can I -- I know that seems like a simple
8 question, but I'm not sure what you mean. You
9 many by monitoring the peripheral oxygen
10 levels, could I tell if the brain is getting
11 less oxygen than it's accustomed to?

12 Q. Sure.

13 A. We hope so, but there are certain
14 physical circumstances in which that may not be
15 true.

16 Q. What would those examples be?

17 A. Well, for example, I had a colleague who
18 did an anesthetic on a young man for a back
19 surgery, and everything was completely normal,
20 including the saturation of the blood with
21 oxygen. And yet, when he went to wake his
22 patient up after a fairly brief surgery, the
23 brain was dead. And it had suffered -- when it
24 was -- it became clear that the brain had
25 suffered an anoxic brain injury. It had not

1 received any oxygen.

2 And we investigated this because it's an
3 unusual circumstance, and there were only two
4 ways in which we believed that could happen.
5 The first was that there had been compression
6 of the neck so that even though the blood
7 pressure was normal, the blood had not flowed
8 to the brain and given the oxygen that it had
9 to the brain during the surgery.

10 The second is that the blood oxygen was
11 actually displaced by another substance that
12 lets the pulse oximeter read that the blood
13 oxygen is normal and lets the patient remain
14 pink in color but, in fact, is not oxygen, and
15 that's carbon monoxide.

16 And we actually concluded that it was
17 likely this patient had been receiving carbon
18 monoxide during the anesthetic because there
19 was a failure of the maintenance of our gas
20 scavenging system in a way that is too complex
21 to explain here.

22 So there are ways in which everything can
23 look normal and the blood oxygen level as being
24 read by the pulse oximeter is normal, but the
25 brain actually doesn't receive oxygen. Those

1 instances obviously are catastrophic and
2 they're rare.

3 Q. And so, is it -- it's catastrophic if the
4 brain has low levels of blood oxygen?

5 A. For a sufficient period of time to cause
6 brain damage, yes.

7 Q. And if blood oxygen levels are low, will
8 that affect consciousness?

9 A. It will -- yeah, it will affect how
10 arousable and how responsive the person is.
11 We're getting back to that original question
12 about consciousness that I kind of hate because
13 I'm not sure what you mean by that, but it
14 affects the way the brain -- it can affect the
15 responsiveness of the brain, let me put it that
16 way.

17 Q. And so, when we talk about low blood
18 oxygen levels, is that the same as hypoxia?

19 A. Yes.

20 Q. Okay. And is hypoxia just a lack of
21 oxygen?

22 A. Yes.

23 Q. Do you encounter low blood oxygen levels,
24 you know, frequently in your practice?

25 A. Yes.

1 Q. Under what circumstances?

2 A. Well, we haven't defined whether we're
3 talking about just abnormally low blood oxygen
4 levels or dangerously, catastrophically low
5 blood oxygen levels.

6 In several -- in many circumstances, we
7 will see low blood oxygen levels. We can see
8 patients who have low blood oxygen levels as a
9 baseline because they have lung disease or
10 other diseases that prevent them from having
11 normal blood oxygen levels, but those levels
12 are not low enough to affect the functioning of
13 their brain or to cause brain damage.

14 During the course of an anesthetic, it's
15 not unusual, for example, during an intubation
16 to see a patient have their blood oxygen levels
17 drop. It is unusual to have them stay low or
18 progress to a level that's low enough to cause
19 brain damage or to -- or to have them stay low
20 enough for long enough to cause brain damage,
21 but it's not unusual to see blood oxygen levels
22 drop below normal when we're intubating a
23 patient, for example.

24 Or if they cough -- if they aren't
25 intubated and are coughing during a procedure,

1 that actually causes a natural occurrence of
2 low blood oxygen levels for a minute to a
3 minute and a half, but it's not sufficient for
4 the brain to be affected by it. And, in fact,
5 if that occurred in a patient who was able to
6 talk to you about it, you probably wouldn't
7 notice any difference between them and normal
8 functioning.

9 But yes, we see low blood oxygen levels
10 all the time. Our goal is to prevent low
11 oxygen levels that would either be deep enough
12 to cause damage or last long enough and -- be
13 deep enough and long enough to cause permanent
14 damage.

15 Q. And could severe hypoxia also affect the
16 heart?

17 A. It can, yes.

18 Q. Okay, how so?

19 A. Well, the heart, as I mentioned before,
20 is another tissue in the body that -- and all
21 tissues in the body require oxygen to function.

22 The brain and the heart actually require
23 about a similar amount of blood flowing to them
24 all the time delivering oxygen, about
25 20 percent of the whole blood volume. And if

1 the blood -- and, in fact, when you have a
2 heart attack, for example, it's because a
3 blockage -- it often is because there's a
4 blockage that's occurred in a blood vessel such
5 that part of the heart doesn't get any blood
6 and, therefore, doesn't get any oxygen and it
7 becomes damaged by that.

8 Q. Could an inmate who's received
9 500 milligrams of midazolam become hypoxic
10 after receiving that dosage?

11 A. If there was interference with their
12 ability to breathe, if they became obstructed,
13 they would -- and nothing was done about it,
14 eventually they could definitely become
15 hypoxic, yes.

16 Q. And how long would that take?

17 A. We've talked about this. When you do a
18 noncompressive asphyxia in dogs and in -- what
19 studies have been done in asphyxia in humans,
20 dangerously low blood oxygen levels take
21 somewhere around eight, nine, ten minutes to
22 develop, but those levels then have to be held
23 low for four to ten minutes to cause either
24 reversible or irreversible damage.

25 So you can achieve a dangerously low

1 blood oxygen level, and then it has to be held
2 that low for a few more minutes before you have
3 damage to the heart or damage to the brain.

4 Q. So do you expect an inmate to experience
5 hypoxia during an execution under Tennessee's
6 protocol?

7 A. They might, but that's not the primary
8 mechanism that I expect them to experience, no.

9 Q. What's the primary mechanism you expect
10 them to experience?

11 A. I expect that they're going to experience
12 flash pulmonary edema from administration of
13 the midazolam, and that that's going to give
14 them horrific sensation of drowning and
15 suffocation.

16 And I expect that they are also going to
17 experience searing pain when the potassium
18 chloride is injected after they're paralyzed.

19 Q. Do you expect an inmate to also
20 experience ventricular fibrillation?

21 A. I would -- I do not expect them to do so
22 in the course of the execution until after the
23 potassium has begun being injected. It's
24 possible for them to experience the arrhythmia
25 during the injection of the potassium, but

1 there's not enough time that passes between the
2 injection -- first injection of the midazolam
3 and the end of the injection of the vecuronium
4 for enough hypoxia to occur to cause cardiac
5 standstill before the potassium's injected.

6 Q. So if a person was severely hypoxic when
7 the vecuronium bromide was administered, could
8 the vecuronium bromide accelerate death?

9 A. No.

10 Q. How soon after the administration of the
11 vecuronium bromide could hypoxia occur?

12 A. Well, we talked about that, as well. If
13 the patient -- I'm sorry, if the inmate is
14 otherwise not obstructed and you give
15 vecuronium, then you're going to talk about
16 waiting for the maximal effect of the
17 vecuronium, but in the executions, I think that
18 happens in under a minute. And then you would
19 have to wait then for the emptying of the
20 oxygen reserves, for the blood oxygen level to
21 drop to dangerously hypoxic levels, and that
22 period is probably around eight to ten minutes.

23 If -- so -- I mean, we -- it's the same
24 calculation we've been doing over and over
25 here.

1 Q. Okay. So you don't believe ventricular
2 fibrillation could occur within two minutes
3 after administration of the vecuronium bromide?

4 A. Let's put it this way: If it occurred,
5 it wouldn't be because of the vecuronium
6 bromide. I mean, you -- if somebody
7 coincidentally had a heart attack, I suppose,
8 but the vecuronium bromide would not cause
9 ventricular fibrillation within two minutes.
10 It won't, it just won't.

11 If that happened, we would see
12 ventricular fibrillation every day in the
13 operating room.

14 Q. Okay.

15 MR. MITCHELL: Can we take a
16 10-minute break or a 12-minute break to 2:30
17 Central?

18 MR. KURSMAN: Sure.

19 (Short break.)

20 BY MR. MITCHELL:

21 Q. Dr. Van Norman, we are back on the record
22 from our break. Did you speak with anyone
23 during your break?

24 A. I just spoke with Alex for a moment to
25 ask him to give me an extra five minutes,

1 because I'd received a phone call I needed to
2 quickly answer. That's the only thing we
3 talked about.

4 Q. Do you still need more time?

5 A. No. Actually, it was -- it was from
6 work. They needed a request for a password. I
7 was able to answer the question quickly, so
8 yeah.

9 Q. Okay. Did you speak with Mr. Kursman
10 about the content of your testimony today?

11 A. No, not at all.

12 Q. Okay. Did you speak with anyone else
13 during our break?

14 A. No.

15 Q. Did you review anything during our break?

16 A. No.

17 Q. Dr. Van Norman, I want to go back to
18 Exhibit 2, which is your report. Do you see
19 that?

20 A. I do, yes.

21 Q. Is this -- okay.

22 A. Do you want me to put my version up so I
23 can scroll a little easier, or do you want
24 to --

25 Q. I think let's do it this way, because I

1 want go through the instances where you use
2 "unconscious."

3 So when you said midazolam does not
4 produce unconsciousness, what did you mean by
5 "unconsciousness"?

6 A. Well, I didn't say it doesn't produce
7 unconsciousness. I said it produces -- does
8 not produce unconsciousness during severely
9 painful stimulation.

10 And so, when you give midazolam, the
11 brain can become unresponsive and unaware as
12 long as it's not stimulated. But once you
13 start applying stimulation, you then have to
14 weigh what you're giving to counteract the
15 awareness of the painful stimulation. And so,
16 then you have to ask, well, how much did you
17 give and how much did you stimulate the
18 patient?

19 Q. So is unresponsive --

20 MR. KURSMAN: I'm going to object for
21 a second. To the extent, Rob, that you just
22 somewhat took her statement out of context,
23 Dr. Van Norman's statement out of context, I'll
24 ask that Dr. Van Norman pull up her report so
25 she can see exactly the entirety of the report

1 while you're questioning her on it.

2 THE WITNESS: Yeah, I --

3 BY MR. MITCHELL:

4 Q. So is unconsciousness the same as
5 unresponsiveness?

6 A. No, it's not.

7 Q. Okay, is unconsciousness the same as
8 unawareness?

9 A. Yeah, generally speaking.

10 Q. So on Page 9, when you said, "midazolam
11 does not produce unconsciousness during
12 severely painful stimulation," what did you
13 mean by "unconsciousness"?

14 A. I meant that the brain -- that when you
15 give midazolam in the absence of stimulation,
16 the brain can become unaware of its
17 surroundings, and that -- but that you cannot
18 give enough midazolam during painful
19 stimulation that the brain will not be aware.

20 Q. And so, what is unconsciousness?

21 A. It's -- it is the brain's lack of ability
22 to know what's going on in its environment.

23 Q. And so, are you now able to define
24 "unconsciousness"?

25 A. Well, I mean, to that extent, sure.

1 Q. So under what circumstances is someone
2 unconscious?

3 A. I think we just said it's when the brain
4 is unaware of its environment.

5 Q. Okay. So when the brain is unaware of
6 its environment, it is unconscious. So does
7 that mean awareness is synonymous with
8 consciousness?

9 A. I actually can't answer that question
10 appropriately because there's a broader
11 question of consciousness, but what we're
12 concerned about in this case is awareness. So
13 for these purposes, we're talking about
14 awareness.

15 Q. Well, I'm trying to understand what you
16 mean when you use the term "unconsciousness,"
17 Dr. Van Norman.

18 A. Yeah, and I'm trying -- I'm struggling to
19 explain it to you, but it -- basically when I
20 talk about unconsciousness, the brain is
21 unaware of its environment.

22 Q. So in what circumstances is a human
23 unconscious?

24 A. When their brain is unaware of their
25 environment, I suppose, although we've talked

1 about the fact that you can be in a dreamlike
2 state and that is not an unconscious state and
3 the brain is unaware of the real world. That's
4 why I don't like trying to define this here.

5 So when the brain is unaware of the
6 stimulus that's being brought to it, it's -- I
7 suppose we could call that unconsciousness for
8 our purposes.

9 Q. Have any of your patients ever been
10 unconscious?

11 A. I assume so.

12 Q. And how do you -- why do you assume so?

13 A. Because in most cases, I've given them
14 multiple drugs that would affect multiple brain
15 areas, including very strong pain medication
16 that will prevent them from perceiving pain.
17 But I don't know that all of my patients have
18 been unconscious or even that the majority of
19 them have been.

20 Q. And, in fact, didn't you testify earlier
21 that most people under general anesthesia are
22 conscious?

23 A. What I testified, if I'm remembering
24 correctly, earlier, is that clinical studies of
25 cases have found that the majority of patients

1 are aware and responsive in severely
2 stimulating cases, such as gynecologic surgery
3 and others, so --

4 Q. In --

5 A. Sorry.

6 Q. Do you believe those studies are
7 accurate?

8 A. They are accurate.

9 Q. And so, if people are aware and
10 responsive, would you agree those people are
11 also conscious?

12 A. Yes.

13 Q. And so, turning to your exhibit -- your
14 expert report, looking here on Page 14, do you
15 see your statement, "Studies have clearly
16 demonstrated that people are seldom purely
17 unconscious until all brain activity has
18 stopped"?

19 A. Yes.

20 Q. Okay. So do you believe that people are
21 seldom purely unconscious until they are dead?

22 A. I don't know.

23 Q. What do you mean you don't know?

24 A. I mean just exactly what I said, I don't
25 know.

1 Q. So you don't know if your patients are
2 unconscious?

3 MR. KURSMAN: Objection.

4 BY MR. MITCHELL:

5 Q. You can answer.

6 A. I think I've answered it before several
7 times. I don't -- there's no way I can tell.
8 There's no monitor for consciousness.

9 Q. So do you see here further on Page 14
10 when you say, "midazolam does not produce a
11 state of unconsciousness deep enough to prevent
12 the prisoner from awakening and experiencing
13 severe pain and suffering when severely painful
14 stimulus is applied"?

15 A. Yes.

16 Q. What drug does produce such a state of
17 unconsciousness?

18 A. I don't know that any single drug does.

19 Q. Okay. What combination of drugs produces
20 such a state of unconsciousness?

21 A. Again, I don't know of a specific
22 combination of drugs that guarantee
23 unconsciousness.

24 Q. Have you ever produced a state of
25 unconsciousness deep enough to prevent someone

1 from awakening and experiencing severe pain and
2 suffering when severely painful stimulus was
3 applied?

4 MR. KURSMAN: Objection.

5 MR. MITCHELL: On what basis?

6 MR. KURSMAN: She -- Dr. Van Norman
7 has answered this question probably ten times
8 now.

9 BY MR. MITCHELL:

10 Q. What's your answer, Dr. Van Norman?

11 A. I'm going to refer you to my previous
12 answers. I don't know how many times I can
13 answer this question, Mr. Mitchell. You can
14 ask it again if you'd like, and I'll say the
15 same thing.

16 Q. Okay. Have you ever, through any
17 combination of drugs or drug by itself -- have
18 you ever, through any combination of drugs,
19 produced a state of unconsciousness deep enough
20 to prevent someone from awakening and
21 experiencing severe pain and suffering when
22 severely painful stimulus is applied?

23 MR. KURSMAN: Objection.

24 MR. MITCHELL: On the same basis?

25 MR. KURSMAN: Same basis.

1 BY MR. MITCHELL:

2 Q. You can answer.

3 A. Same answer.

4 Q. What's that answer?

5 A. The answer is I've already answered the
6 question, and I'm going to give you the same
7 answer each time. I don't know what you're
8 asking -- how you -- what you -- how you expect
9 me to change my answer, Mr. Mitchell.

10 Q. Well, you've said that midazolam can't
11 produce a certain state of unconsciousness, so
12 I'm asking you, any drug or combination of
13 drugs can.

14 A. And I have said --

15 MR. KURSMAN: Objection again.

16 THE WITNESS: I believe I've said
17 several times now that I don't know.

18 BY MR. MITCHELL:

19 Q. What is a drug that is efficient at
20 producing unconsciousness?

21 A. As I believe I answered in a previous
22 question --

23 MR. KURSMAN: I'm going to object
24 before you answer it.

25 Objection, asked and answered.

1 BY MR. MITCHELL:

2 Q. You can answer, Dr. Van Norman. What is
3 a drug efficient at producing unconsciousness?

4 A. As I believe I've answered in a previous
5 question, I don't know that any single drug can
6 produce unconsciousness.

7 Q. Is any combination of drugs efficient at
8 producing unconsciousness?

9 MR. KURSMAN: Objection.

10 BY MR. MITCHELL:

11 Q. You can answer, Dr. Van Norman.

12 A. I've answered this question before, I
13 don't know.

14 Q. Do you see your statement here on Page 16
15 at the beginning of the first full paragraph,
16 starting "multiple case reports"?

17 A. Yes, I see it.

18 Q. Can you read that first sentence?

19 A. "Multiple case reports and clinical
20 studies in the literature have demonstrated
21 that even massive doses of drug combinations
22 that include benzodiazepines and narcotics in
23 an operating room setting do not guarantee that
24 a surgical patient is unconscious once painful
25 stimulus is applied."

1 Q. Is there any sort of drug combination
2 that can guarantee that a surgical patient is
3 unconscious once painful stimulus is applied?

4 MR. KURSMAN: Objection.

5 BY MR. MITCHELL:

6 Q. You can answer, Dr. Van Norman.

7 A. It's the same answer as the previous six
8 or seven times you've asked it, I don't know.

9 Q. And do you see this Footnote 33 in your
10 report?

11 A. I do.

12 Q. And do you see where it says,
13 "Unresponsiveness does not equal
14 unconsciousness"?

15 A. That's correct.

16 Q. Do you agree with that?

17 A. I do.

18 Q. And do you see this Footnote 46 of your
19 report?

20 A. That is on Page 17 instead of 16?

21 Q. 17, yes.

22 A. I believe that's the same foot -- yes.

23 Q. I was just making that same discovery,
24 Dr. Van Norman.

25 Okay. Do you see -- can you turn to

1 Page 21 of your report?

2 A. I'm on Page 21.

3 Q. Can you read me the sentence, third line
4 from the top, that starts with the word
5 "during"?

6 A. "During a period of one minute of breath
7 holding, oxygen levels will still be normal and
8 carbon dioxide rise only slightly above normal,
9 so oxygen and carbon dioxide levels do not
10 explain the compulsion to breathe and will not
11 cause unconsciousness."

12 Q. Do you agree with that statement?

13 A. I do.

14 Q. What is something that could cause
15 unconsciousness?

16 A. Something?

17 Q. Anything.

18 A. Severe head trauma.

19 Q. And so, if someone received severe head
20 trauma, they could be unconscious?

21 A. I believe so, yes.

22 Q. And what do you mean by "unconscious"?

23 A. Where they do not have enough connection
24 left in the brain to be aware of the
25 environment. Some people after severe head

1 trauma are brain dead, Mr. Mitchell.

2 Q. Can you turn to Page 22?

3 A. Okay.

4 Q. Is unconscious the same as anesthetized?

5 A. The reason I'm hesitating is awareness
6 used to be considered a critical part of the
7 definition of general anesthesia.

8 Well, first of all, not all anesthetics
9 are general anesthetics. So you can be
10 anesthetized for a procedure using a local
11 anesthetic, for example, where somebody injects
12 just -- like for dental extraction, you're
13 anesthetized. They inject a local and you
14 don't feel pain with that.

15 You can be anesthetized using regional
16 anesthesia, like spinal and peripheral nerve
17 blocks, or you could be anesthetized using a
18 general anesthetic. And it used to be that
19 everyone said that awareness, unawareness, was
20 part of a general anesthetic, but actually many
21 people have changed their definition to say
22 that it's unresponsiveness rather than
23 unawareness.

24 Q. Okay. So is anesthetized the same as
25 unconscious?

1 A. Not necessarily, no.

2 Q. Can they be the same?

3 A. A --

4 MR. KURSMAN: Objection.

5 MR. MITCHELL: On what basis?

6 MR. KURSMAN: Asked and answered.

7 BY MR. MITCHELL:

8 Q. Can they be the same, Dr. Van Norman?

9 A. Perhaps.

10 Q. Can you give me an example of when they
11 would be the same?

12 A. Well, we've -- you've already asked me a
13 number of times if I know for sure that all
14 patients are unconscious under anesthesia, and
15 I said I don't know. But it is -- I suppose
16 it's possible that some are and they would then
17 be, therefore, unconscious and anesthetized.

18 Q. Can you turn to Page 23 of your report?

19 A. Uh-huh.

20 Okay, I'm there.

21 Q. Can you go to the bottom?

22 A. Yes.

23 Q. Can you read the sentence that starts
24 with "this is particularly true"?

25 A. Well, since you don't have the -- okay,

1 "This is particularly true with the Tennessee
2 protocol because Warden Mays, the person
3 charged with the so-called consciousness check
4 in the Tennessee protocol and therefore
5 determines whether the execution requires a
6 repeat injection of midazolam or whether the
7 paralytic drug can be given, appears to not
8 know exactly how a consciousness check is
9 intended to work, nor how to tell a conscious
10 person from an unconscious one."

11 Q. How would Warden Mays succeed in
12 differentiating a conscious person from an
13 unconscious person when trained medical
14 professionals fail?

15 A. Well, I would ask the same question,
16 Mr. Mitchell. I am asserting that he cannot.

17 Q. Could anyone?

18 A. Unlikely.

19 Q. And do you see this sentence on Page 24
20 where you say, "Warden Mays confuses
21 unresponsiveness with unconsciousness"?

22 A. About how far down is it so I can find it
23 for you?

24 Q. Five lines.

25 A. Yes.

1 Q. What's the difference between
2 unresponsiveness and unconsciousness?

3 A. You can have a person who is unresponsive
4 but still aware of their environment. And in
5 this case -- and so, he doesn't understand that
6 a person may be unresponsive and still be
7 conscious. That's what that sentence means.

8 He -- by "confuses," I mean that he
9 equates the two, and they are not equivalent,
10 as we've already said.

11 Q. Dr. Van Norman, have you ever observed a
12 patient struggling to breathe during surgery?

13 A. Yes.

14 Q. Have you ever observed a conscious
15 patient struggling to breathe during surgery?

16 A. Yes.

17 Q. Have you ever observed an anesthetized
18 person struggling to breathe during surgery?

19 A. Yes.

20 Q. Okay. Was that anesthetized person
21 conscious?

22 A. I don't know.

23 Q. What is the isolated forearm technique?

24 A. In the isolated forearm technique,
25 because so many of the major surgeries that

1 cause severe pain involve paralyzing the
2 patient and because all those surgeries also
3 often involve the administration of midazolam,
4 which wipes out memory, in order to determine
5 if the person is aware in the moment during
6 surgery, you have to ask them in the moment,
7 but they're paralyzed and they can't answer.

8 So in the isolated forearm technique,
9 before the paralytic agent is given, a
10 tourniquet is applied on the arm, and the
11 patient is instructed in several signals to
12 give if they're -- in answer to questions. And
13 they're told that they'll be asked to move
14 their arm at various points. They may be asked
15 to signal -- to provide a particular signal if
16 they're in pain.

17 The tourniquet is inflated so that no
18 blood carrying the paralytic can enter the arm.
19 The paralytic is administered into a vein that
20 is either in a different limb or above the
21 tourniquet, and the patient -- the rest of the
22 patient's body is paralyzed.

23 And then during the surgery, the
24 anesthetist or anesthesiologist can ask the
25 patient if they are awake and to do certain

1 things to show if they're awake, and also ask
2 them if they're in pain.

3 Q. Is the isolated forearm technique
4 commonly referred to as the IFT?

5 A. Yeah, because isolated forearm technique
6 is a mouthful.

7 Q. Can we both agree to refer to it as IFT?

8 A. Oh, please. That be would be great.

9 Q. Does the IFT require a high level of
10 consciousness?

11 A. It does. It requires the brain being
12 able to know that it's being addressed or an
13 event -- that an event is happening.

14 So if we ignore the surgical stimulus for
15 a moment, the brain has to be able to, in other
16 words, hear the anesthesiologist and understand
17 what's being asked, what they're -- what the
18 brain is being asked to do. And then it has to
19 actually not only be conscious of that, it has
20 to also demonstrate responsiveness by moving
21 and following the instructions that the
22 anesthesiologist gives it.

23 Q. And does the IFT require a high level of
24 awareness, too?

25 A. I would assume so, yes.

1 Q. Okay, but you don't know?

2 A. No, I -- yes, I'll just say yes.

3 Q. Is the IFT the gold standard for studying
4 consciousness?

5 A. It is.

6 Q. Okay. And it's the gold standard for
7 studying consciousness after injection of
8 drugs; is that correct?

9 A. I -- yes. I don't know if -- I don't
10 know what it's also used in other
11 circumstances, but in the study of
12 consciousness after injection of drugs, it
13 is -- oh, it is the standard.

14 Q. What does "gold standard" mean?

15 A. Well, for you history buffs, the gold
16 standard refers to the thing that everything
17 refers back to, the thing that stands for the
18 thing that best represents it, because we used
19 to use a gold standard and may -- and still do
20 to some degree to represent how much something
21 is worth.

22 Q. And so, would you agree that the IFT is
23 the premier mechanism of studying
24 consciousness?

25 A. Yes.

1 Q. Okay. Do you use the IFT in your
2 clinical practice for monitoring patient
3 consciousness?

4 A. I have done some -- I have done, during
5 some clinical work, some clinical research, but
6 it is -- in the United States, it is not a
7 common clinical monitor to use. It is used in
8 Great Britain.

9 Q. When did you use it in the United States?

10 A. Well, I became interested in awareness
11 under anesthesia when I had a patient in
12 cardiac surgery who had received massive doses
13 of Valium and fentanyl and yet still was able
14 to describe having his chest sawed open during
15 the cardiac surgery.

16 So we -- this was in the '80s, and we
17 were interested in figuring out how many
18 patients were aware. And we really couldn't
19 find a way to do that, sort of playing people
20 sounds, asking them to remember words, none of
21 that worked because the benzodiazepines wipe
22 out awareness.

23 And in the early '90s, Dr. Russell and
24 others began to use the IFT to experiment with
25 it. And we ran a couple of preliminary

1 clinical experiments in my department during
2 which we used the IFT, and they were run during
3 the actual surgeries. So we were using them as
4 a monitor.

5 But we didn't have -- this was not a
6 popular area of funding or anything. We didn't
7 have funding. I was not -- I was a young
8 attending. I wasn't a full researcher. And it
9 just didn't go anywhere. But I have used the
10 technique and I do know how to use it.

11 Q. So have you used -- if I heard you
12 correctly, you've used the IFT during surgery?

13 A. During a couple of little clinical
14 studies that were carried out during actual
15 surgeries, yes.

16 Q. What types of surgeries were those?

17 A. Just general -- actually, I think they
18 were GYN surgeries, if I remember right. We
19 were looking at -- the IFT requires some space
20 around it to carry out, so we were looking at
21 surgeries where the surgeon would be a little
22 further away from us in the site, so the
23 further down the table.

24 So my -- I do remember doing them in a
25 couple of GYN surgeries.

1 Q. And roughly what year would this have
2 been or years?

3 A. It would have been in the '90s sometime,
4 but I don't really remember. It was such a
5 brief thing, I just don't remember.

6 Q. And why don't you use it during surgeries
7 now?

8 A. It's a long and very unsatisfying answer.

9 In the United States, traditionally,
10 anesthesiologists have not had a lot of
11 authority in the operating room, and the
12 surgeons have. And performing the IFT requires
13 not only a lot of space, it requires the
14 anesthesiologist talking to the patient during
15 the surgery. It requires movement of the
16 patient. It requires a longer setup before the
17 surgery, so it's going to take time for the
18 anesthesiologist to get ready.

19 And in a system like ours, which is
20 profit driven, for example, time is money, and
21 surgeons don't like that time taken up.
22 They're frequently complaining that -- during
23 the time that we were doing it, they were
24 complaining about the fact that we were
25 actually talking to the patient during the

1 surgery.

2 And culturally, in the US, it's been
3 traditional that what the surgeon wants, the
4 surgeon gets. Times are changing, and we may
5 see that change, but it's just not accepted in
6 the operating room culturally.

7 Q. And --

8 A. I'm sorry, excuse me.

9 Q. Do you remember this morning, Dr. Van
10 Norman, you testified that you had served as an
11 expert witness in Arkansas in the McGehee case?

12 A. Yes, uh-huh.

13 Q. And do you remember saying you had worked
14 with Mr. Williams in that case?

15 A. John Williams, I believe. I think so,
16 yes. I think I did say that, yeah.

17 Q. Okay. Can you see my screen right here,
18 Dr. Van Norman?

19 A. I can.

20 Q. Okay.

21 MR. KURSMAN: Rob, can you send this
22 exhibit that you're about to use with Dr. Van
23 Norman so I can forward it to her?

24 MR. MITCHELL: Yeah. Yeah. Let me
25 scroll down while that's being sent.

1 MR. KURSMAN: Do you want to go off
2 the record for five minutes?

3 MR. MITCHELL: Sure.

4 MR. KURSMAN: Okay.

5 (Short break.)

6 BY MR. MITCHELL:

7 Q. So I'm going to share my screen, Dr. Van
8 Norman, but I know you have the document in
9 front of you.

10 So in front of you, do you see what
11 appears to be a transcript from the McGehee
12 versus Hutchinson case?

13 A. I do.

14 Q. Is that transcript dated April 26th,
15 2019?

16 A. Yes.

17 Q. Okay. And if you scroll to the third
18 page, 496, do you see your name as a witness?

19 A. I do.

20 Q. Okay. And does it say direct started on
21 Page 497?

22 A. I assume that's what it means. It just
23 says "direct" and "497," so I assume that's
24 what you're referring to.

25 Q. Okay. And cross, 558?

1 A. Yep.

2 Q. And redirect 543?

3 A. Yes.

4 Q. And then the next witness, Gran P. (sp),
5 is listed as direct started at 612; is that
6 right?

7 A. Yes.

8 Q. Okay. So if you can scroll down to
9 Page 593.

10 A. 593?

11 Q. Correct.

12 A. Okay.

13 MR. KURSMAN: And, Mr. Mitchell, just
14 for the record, it looks like this document has
15 been at least tampered with a bit; is that
16 right?

17 MR. MITCHELL: Highlighted?

18 MR. KURSMAN: Sure, okay.

19 MR. MITCHELL: Is that what you're
20 referring to?

21 MR. KURSMAN: Yep, just that it's not
22 an original document.

23 MR. MITCHELL: Okay. Do you see any
24 other evidence of tampering?

25 MR. KURSMAN: Well, I just received

1 the document about 30 seconds ago.

2 MR. MITCHELL: But so far, do you see
3 any other evidence of tampering other than the
4 highlighting?

5 MR. KURSMAN: No, and that's all I
6 meant. It was just a poor choice of language,
7 poor choice of words by me.

8 BY MR. MITCHELL:

9 Q. Dr. Van Norman, can you scroll down to
10 Line 19 on Page 593?

11 A. Yeah. I'm sorry, my program's skipping
12 around, so I'm just getting to 593. And I'm
13 sorry, what line did you refer to?

14 Q. Line 19.

15 MR. KURSMAN: And, Dr. Van Norman,
16 I -- at this point, I'm going to object. If
17 there are any questions regarding what this
18 says, if you need to take your time to review
19 this document, you are entitled to do that.

20 THE WITNESS: And I will, but in
21 order to do that, I'd like to hear the question
22 first, if that's okay.

23 MR. KURSMAN: Sure.

24 BY MR. MITCHELL:

25 Q. Well, on Page 593, Line 19, do you see

1 where the question was, "And you just told me
2 you've never in your career used IFT during
3 surgery?"

4 A. Yes, I see that.

5 Q. Okay. And do you see on Line 21 where
6 the answer was, "I don't think you will find
7 anyone who has in this country. It's not what
8 we use. It's not used here"?

9 A. Yes.

10 Q. Was that your answer to the question
11 whether you used an IFT during surgery?

12 A. Let me just take a moment and review this
13 section of the transcript, because I want to
14 make sure I know the -- I remember the context
15 in which this was given.

16 Q. Sure.

17 A. So give me just a moment, please.

18 Q. Take your time.

19 A. I'm sorry, my thing is -- I apologize, my
20 program's skipping around. Let me just go
21 back.

22 (Witness viewing document.)

23 Yes, that's correct. That was my
24 testimony.

25 Q. So have you or have you not used an IFT

1 during surgery?

2 A. Mr. Mitchell, you just asked me a little
3 while ago if I had used it, and I said I had
4 used it in a research clinical study that was
5 performed during actual surgery. I wasn't the
6 anesthesiologist during the study procedures
7 that we did, so I was not performing
8 anesthesia.

9 And I interpreted your question to mean,
10 have I ever used it clinically to monitor my
11 patients during surgery, and the answer is, no,
12 I never have. So I apologize if I misled you
13 or I wasn't clear in what I was testifying to a
14 couple of moments ago, but it is correct what I
15 said in Arkansas that I have personally never
16 used it while I was anesthetizing someone to
17 monitor their progress during the anesthetic.

18 Q. Is that what you said in Arkansas?

19 A. They said -- well, that's what I
20 interpreted at the time their context to mean.
21 If you look at that word, they just ask me --
22 let me find it again.

23 "You have never in your career used IFT
24 during surgery?" And they were asking about
25 whether I was monitoring patients using it, at

1 least that's what I was interpreting at the
2 time, I, when I was doing anesthesia. It seems
3 to me that -- I mean, that is how I interpreted
4 this and that is still my answer. I've never
5 used it to monitor a patient while under
6 anesthesia.

7 I was a -- doing a little clinical
8 research study during someone else's
9 anesthetic. And so, I still would stand by
10 both of my answers, the answer in this
11 transcript and the one that I gave you a few
12 minutes ago with that clarification so you
13 understand what I meant.

14 Q. So to make sure I understand your
15 explanation, you actually have used an IFT
16 during surgery?

17 A. I have not used it as a monitoring -- I'm
18 going to say what I -- my answer again. I have
19 never used the IFT as a monitoring device
20 during an anesthetic that I performed during my
21 surgery. I was doing research that used the
22 IFT on someone else's anesthetic, and that is
23 what I was referring to in my earlier answers.

24 Q. So would that constitute using an IFT
25 during surgery?

1 A. I did not interpret it to mean that, no.

2 Q. Can you scroll up to Page 579, Dr. Van
3 Norman? Tell me when you're there.

4 A. It's a slow scroll, I'm sorry.

5 Okay, I'm on 579.

6 Q. And do you see on Line 3 where you were
7 asked if the highest dose of midazolam that
8 you've ever given a patient is approximately 50
9 or 55 milligrams?

10 A. Yes, I do.

11 Q. And what was your answer in Line 6?

12 A. "I think that's correct, yes."

13 Q. Do you agree with that statement?

14 A. I do, yes.

15 Q. Okay. So the highest dose of midazolam
16 you've ever given a patient is 50 to
17 55 milligrams?

18 A. Well, I -- as we talked about earlier,
19 doses of midazolam --

20 MR. KURSMAN: I'm going to object
21 here. You just asked, she answered yes.

22 MR. MITCHELL: Okay.

23 BY MR. MITCHELL:

24 Q. So you can continue, Dr. Van Norman. Is
25 the highest dose of midazolam you've ever given

1 a patient 50 to 55 milligrams?

2 A. I think it -- it's closer to a hundred
3 milligrams, but to be honest, in both
4 instances, I am now trying and I was trying
5 then to recall something that had happened
6 almost 30 years earlier.

7 My recollection today is that we used 1
8 to 1 and a half milligrams of midazolam in the
9 cases that we did and -- because we had
10 patients that averaged a hundred kilograms,
11 that's where I'm saying. So I -- to be honest,
12 both of these are based on memory, but my
13 honest recollection today is that it was closer
14 to a hundred milligrams.

15 Q. Could it have been as much as
16 150 milligrams?

17 A. Yeah, it could have, because as I
18 mentioned, I think our average patient was
19 around a hundred kilo by that time, and I
20 believe our standard was 1 to 1 and a half
21 milligrams per kilo. But this is a
22 recollection, it's not a -- I can't point to a
23 particular case and tell you for sure what the
24 doses were.

25 Q. Would you expect a different effect in a

1 patient who received 50 milligrams of midazolam
2 versus a patient who received 150 milligrams of
3 midazolam?

4 A. I would not. It would not be relevant.

5 Q. Then why would you give the extra hundred
6 milligrams of midazolam?

7 A. That was the protocol at the time.
8 Usually we operate on clinical protocols in
9 terms of some of the standardized surgery. And
10 so, when a department decides this is our
11 practice, here's what we're going to do, we do
12 that.

13 Q. And you wouldn't expect that extra
14 hundred milligrams to make any discernable
15 effect in the patient?

16 MR. KURSMAN: Objection, asked and
17 answered.

18 BY MR. MITCHELL:

19 Q. You can answer.

20 A. No.

21 Q. No, you would not expect a discernable
22 effect?

23 A. That's correct.

24 Q. Do you use any tools for monitoring
25 patient consciousness?

1 A. We've already talked about the tools that
2 I use and that most anesthesiologists use for
3 attempting to monitor consciousness, but we've
4 also discussed the fact that there's no monitor
5 that actually can monitor or detect
6 consciousness.

7 Q. Including a BIS monitor?

8 A. Oh, absolutely including a BIS monitor.

9 Q. Does a BIS monitor measure awareness?

10 A. It does not.

11 Q. What is a BIS monitor?

12 A. A BIS monitor is a -- it's what's called
13 a processed EEG monitor. It was invented by
14 Aspect Medical Corporation back in late '80s,
15 early '90s. They created a super secret
16 proprietary formula by which they would take
17 a -- I don't remember if it was a 12- or
18 14-channel EEG and create a number instead of
19 wave forms. They would create a number from, I
20 don't know, zero to a hundred that was supposed
21 to tell you if the patient was awake or not.

22 Q. Have you ever used a BIS monitor?

23 A. I have. Early in my career, we played
24 around with the BIS monitor at the University
25 of Washington, yes.

1 Q. Do you think you've used a BIS monitor in
2 the last 20 years?

3 A. I -- what's 20 years ago? Help me --
4 about 2000?

5 Q. 2002.

6 A. I doubt it, no.

7 Q. Okay. Do you remember what the
8 circumstances were when you last used the BIS
9 monitor?

10 A. Not specifically, no.

11 Q. Do you know whether anyone at the
12 University of Washington uses a BIS monitor in
13 their clinical practice?

14 A. Yes. I couldn't tell you what
15 percentage. We do have BIS monitors, but they
16 are not used by all of the anesthesiologists
17 nationally. They're only used by about 25 to
18 30 percent of anesthesiologists, and they're
19 not considered a standard of care monitor by
20 the ASA.

21 Q. Are BIS monitors commonly used in
22 emergency vehicles?

23 A. I have no idea.

24 Q. What is the medical standard of care for
25 monitoring consciousness in anesthesia?

1 A. The medical standard of care would be the
2 monitor methods I've already talked about;
3 watching the vital signs and physically
4 observing the patient. There is no other kind
5 of monitor that is called upon for -- for
6 monitoring consciousness in patients who are
7 undergoing anesthesia in surgery.

8 Q. Would your answer be the same for
9 monitoring awareness?

10 A. That is correct.

11 Q. Okay. I just want to make sure I
12 understand. Is it your testimony that there's
13 no reliable monitor to monitor consciousness in
14 anesthesia?

15 A. That's correct.

16 Q. Have you ever used the Glasgow Coma Scale
17 to monitor consciousness?

18 A. The Glasgow Coma Scale is not a
19 consciousness monitor. It is a scale that
20 rates the level of consciousness of a person in
21 one point in time, and it's usually used to
22 rate consciousness or at least the level of
23 brain injury in trauma patients. So it's
24 widely used in emergency rooms and in ICUs.

25 Q. Have you ever used it to rate

1 consciousness?

2 A. In the deep, dark, distant past when I
3 was an internist, we did use it.

4 Q. Okay. But not in the last 20 years?

5 A. Not that I recall, no.

6 Q. Do you know other anesthesiologists who
7 use the Glasgow Coma Scale today to rate
8 consciousness?

9 A. Glasgow Coma Scale is not used in the
10 operating room.

11 Q. Do you know any anesthesiologists who use
12 it?

13 A. Not in the operating room, no.

14 Q. Do you know any anesthesiologists who use
15 it anywhere?

16 A. I suppose that some of our intensivists
17 might use it in the ICU, but not in the --
18 or -- no, in the ICU but not in the operating
19 room. It's not a continuous monitor.

20 Q. It's not a what?

21 A. It's not a continuous monitor.

22 Q. What does that mean?

23 A. It -- as I said when I first answered the
24 question, it rates a person's responsiveness,
25 not their consciousness, their responsiveness

1 at a given point in time. So it isn't
2 something where you can keep repeating it in a
3 short period of time and get a different
4 answer. It wouldn't be useful for monitoring a
5 rapidly changing situation.

6 Q. Have you ever used the Richmond
7 Agitation-Sedation Scale?

8 A. I have, yes.

9 Q. Under what circumstances?

10 A. I can't remember, and I don't remember
11 the details of that scale off the top of my
12 head.

13 Q. Do you know any anesthesiologists who
14 currently use the Richmond Agitation-Sedation
15 Scale?

16 A. Not in the operating room.

17 Q. Do you know any who use it anywhere else,
18 such as the ICU?

19 A. I don't know.

20 MR. MITCHELL: Can we go off the
21 record real quick?

22 MR. KURSMAN: Sure.

23 (Short break.)

24 BY MR. MITCHELL:

25 Q. Dr. Van Norman, we just took a break.

1 During that break, did you speak with anyone?

2 A. Nope.

3 Q. Did you review anything?

4 A. No.

5 Q. Were you asked by Plaintiff or
6 Plaintiff's counsel to identify a source of
7 pentobarbital for Defendants to use in
8 executions?

9 MR. KURSMAN: And I'll object to that
10 anyway.

11 MR. MITCHELL: On what basis?

12 MR. KURSMAN: Attorney-client
13 privilege.

14 BY MR. MITCHELL:

15 Q. Did you include anything in your report
16 about pentobarbital, Dr. Van Norman?

17 A. In my expert report?

18 Q. In this litigation, yes.

19 A. Not that I recall, no.

20 Q. Do you know where Defendants in this case
21 can obtain pentobarbital for use in executions?

22 A. No.

23 Q. Have you told Plaintiff's counsel where
24 Defendants can obtain pentobarbital for use in
25 executions?

1 MR. KURSMAN: Objection, and I'll
2 instruct the witness not to answer.

3 BY MR. MITCHELL:

4 Q. Have you told Plaintiff himself where
5 Defendants can obtain pentobarbital for use in
6 executions?

7 MR. KURSMAN: And to clarify, Dr. Van
8 Norman, when Mr. Mitchell says "Plaintiff
9 himself," Mr. Mitchell is talking about Terry
10 King.

11 THE WITNESS: I'm sorry,
12 Mr. Mitchell, I'm -- can you just repeat the
13 question for me again?

14 BY MR. MITCHELL:

15 Q. Absolutely.

16 Have you told the Plaintiff in this case,
17 Terry Lynn King, where Defendants can obtain
18 pentobarbital for use in executions?

19 A. No.

20 Q. Dr. Van Norman, thank you for your time.
21 That's all my questions for you.

22 Until the resolution of the subpoena
23 issue, we are going to leave your deposition
24 open, but I have no more questions for you at
25 this time.

1 A. Can I -- does that mean that you can
2 bring me back to ask questions or --

3 Q. Maybe, depending on how discussions play
4 out with your counsel.

5 A. Okay.

6 MR. KURSMAN: Dr. Van Norman, you and
7 I can talk about that off the record after.

8 THE WITNESS: Absolutely. Thank you.

9 MR. KURSMAN: Mr. Mitchell, we have
10 no questions.

11 MR. MITCHELL: Okay.

12 THE REPORTER: Just a quick question
13 before you all go, gentlemen. Did you want to
14 order this, Mr. Mitchell?

15 MR. MITCHELL: Yes, please.

16 THE REPORTER: MR. KURSMAN, did you
17 want a copy?

18 MR. KURSMAN: Yes, we would like a
19 copy.

20 (An off-the-record discussion was
21 held.)

22 MR. KURSMAN: Could we just go back
23 on the record for one second. I'm just going
24 to lodge an objection to keeping the deposition
25 open.

1 MR. MITCHELL: Okay, what's the
2 objection?

3 MR. KURSMAN: That the documents were
4 provided to the extent that a subpoena wasn't
5 served on Dr. Van Norman. So that can be
6 resolved at some point, but I will object to
7 leaving the deposition open.

8 MR. MITCHELL: Even though you've
9 lodged objections to her answering about
10 whether documents were provided? You
11 instructed the witness not to answer.

12 MR. KURSMAN: Yes.

13 MR. MITCHELL: But you're still
14 objecting to leaving the deposition open to
15 resolution of that issue?

16 MR. KURSMAN: To a resolution of
17 which issue?

18 MR. MITCHELL: Production of
19 documents.

20 MR. KURSMAN: I thought the
21 resolution of -- I'm objecting to leaving the
22 deposition open to subject Dr. Van Norman to
23 further questions on any topics whatsoever.

24 MR. MITCHELL: Even if we're entitled
25 to additional documents that we requested via

1 subpoena?

2 MR. KURSMAN: Yes.

3 MR. MITCHELL: Okay. Nothing
4 further.

5 FURTHER DEPONENT SAITH NOT

6 (At 3:40 p.m. CST)

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REPORTER'S CERTIFICATE

STATE OF TENNESSEE

COUNTY OF SUMNER

I, JENNY CHECUGA, Licensed Court Reporter,
with offices in Nashville, Tennessee, and Registered
Professional Reporter, hereby certify that I reported
the foregoing videoconference deposition of GAIL VAN
NORMAN, MD by machine shorthand to the best of my
skills and abilities, and thereafter the same was
reduced to typewritten form by me.

I further certify that I am not related to
any of the parties named herein, nor their counsel,
and have no interest, financial or otherwise, in the
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My Notary Commission Expires: 5/22/2023
LCR #690 - Expires: 6/30/2022

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